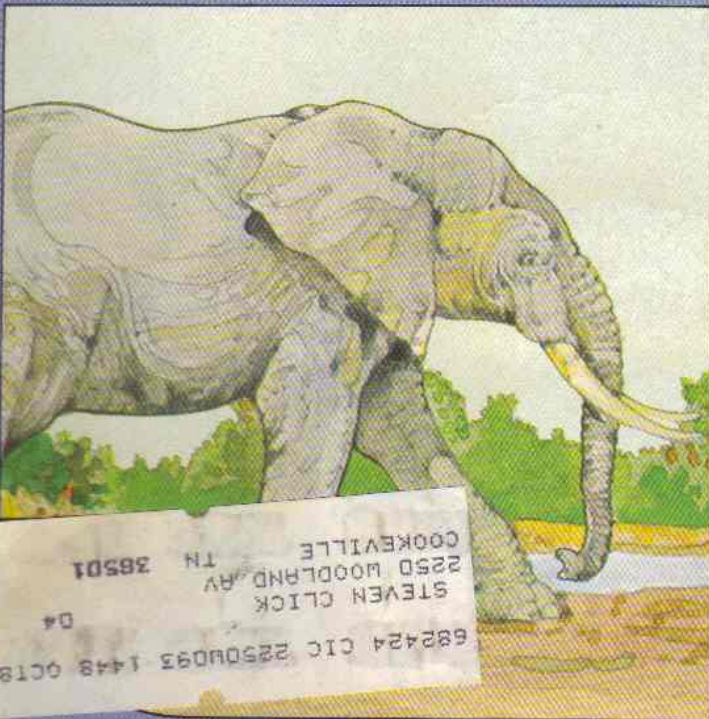
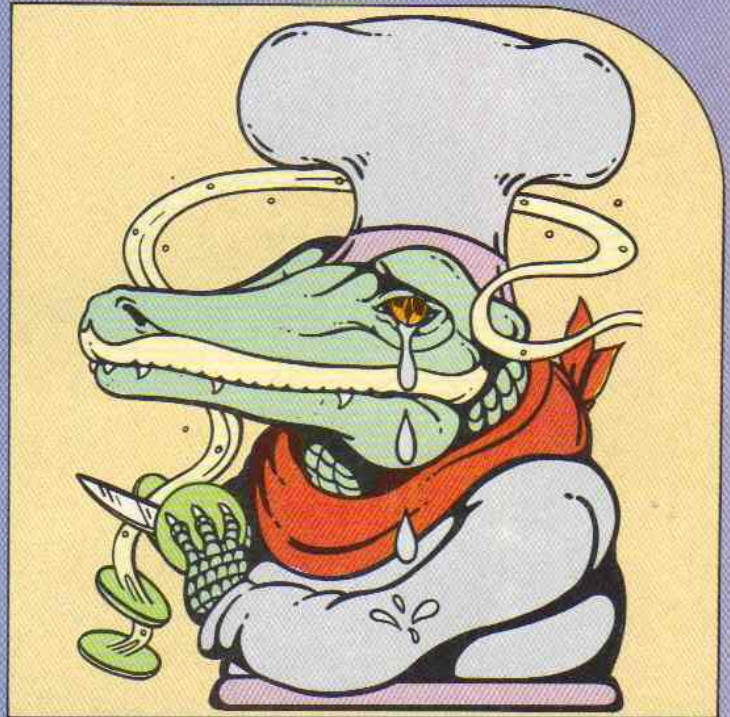
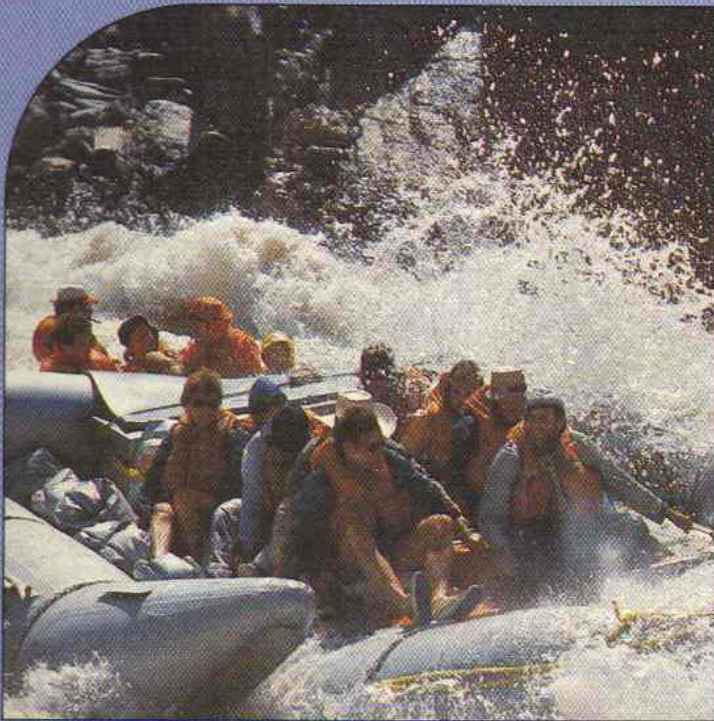
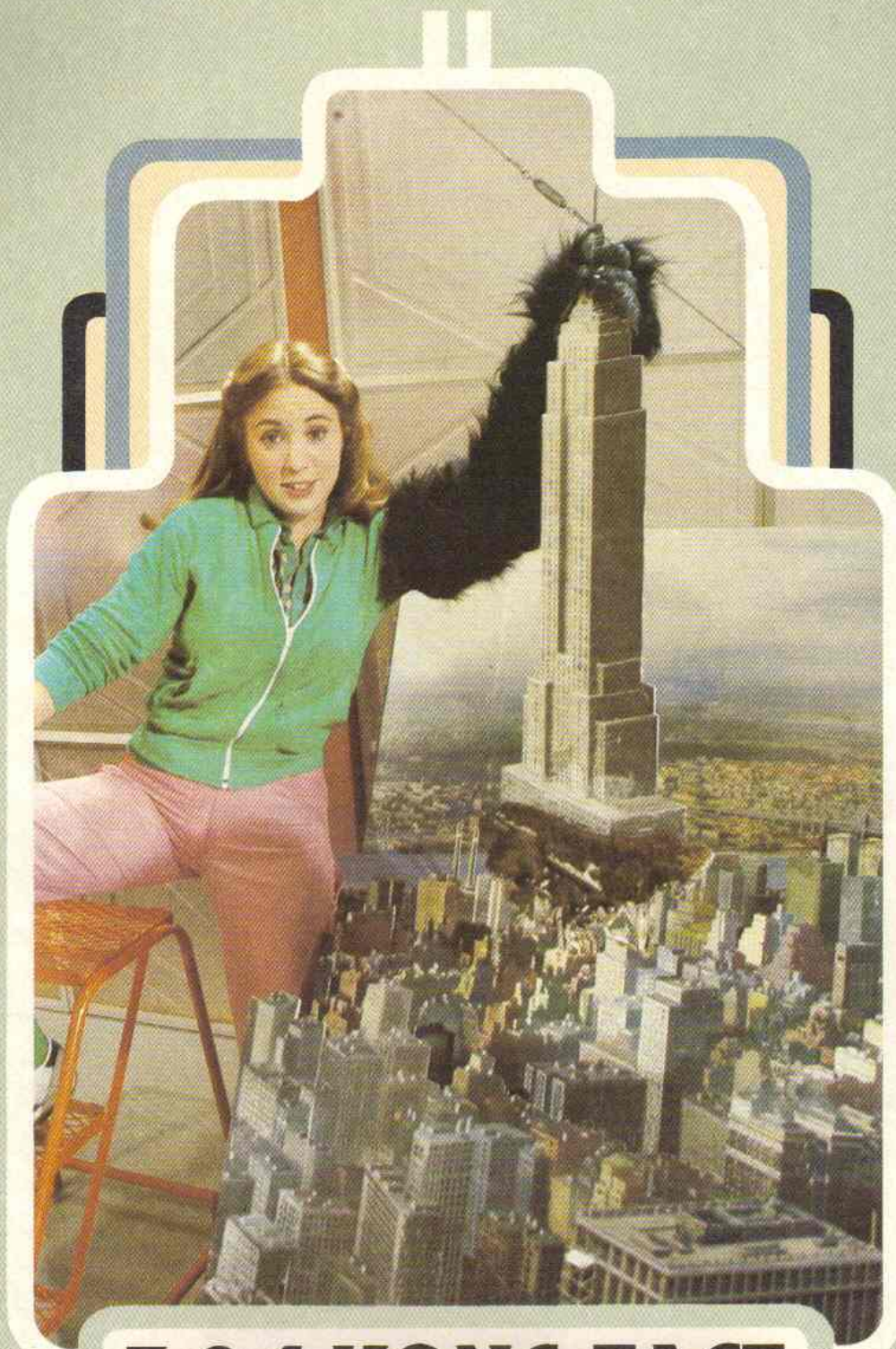


321 CONTACT TM

Inside: Race Through the Grand Canyon!



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STEVEN CLICK
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3-2-1 KONG-TACT

What's Lisa doing monkeying around with that hairy ape glove? Just showing you one way special effects are done. Cover up all of her but that arm and you would swear King Kong was in town. And what does Lisa do when she isn't going ape? You can find out in this month's Contact Report. Just turn to page 28.

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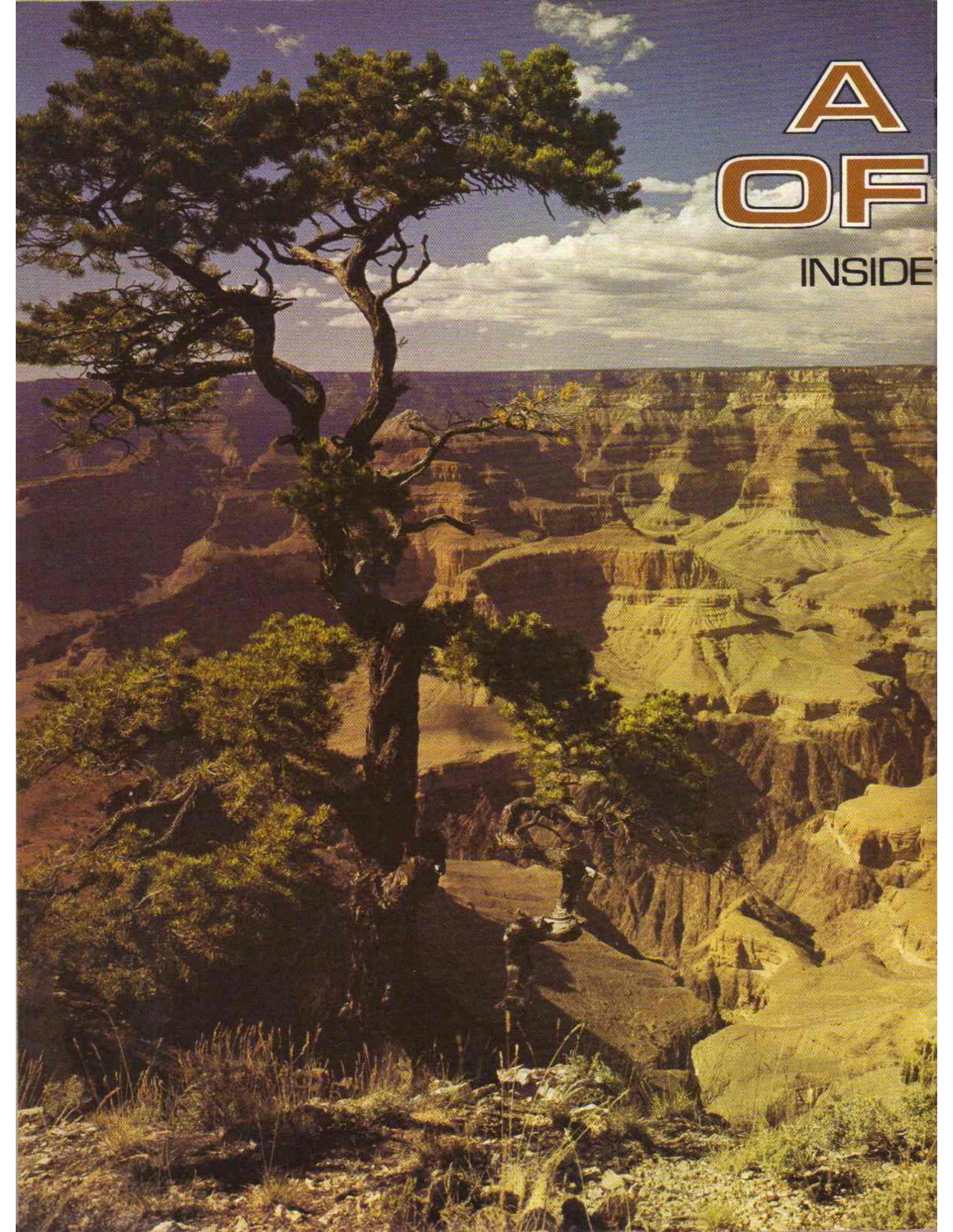


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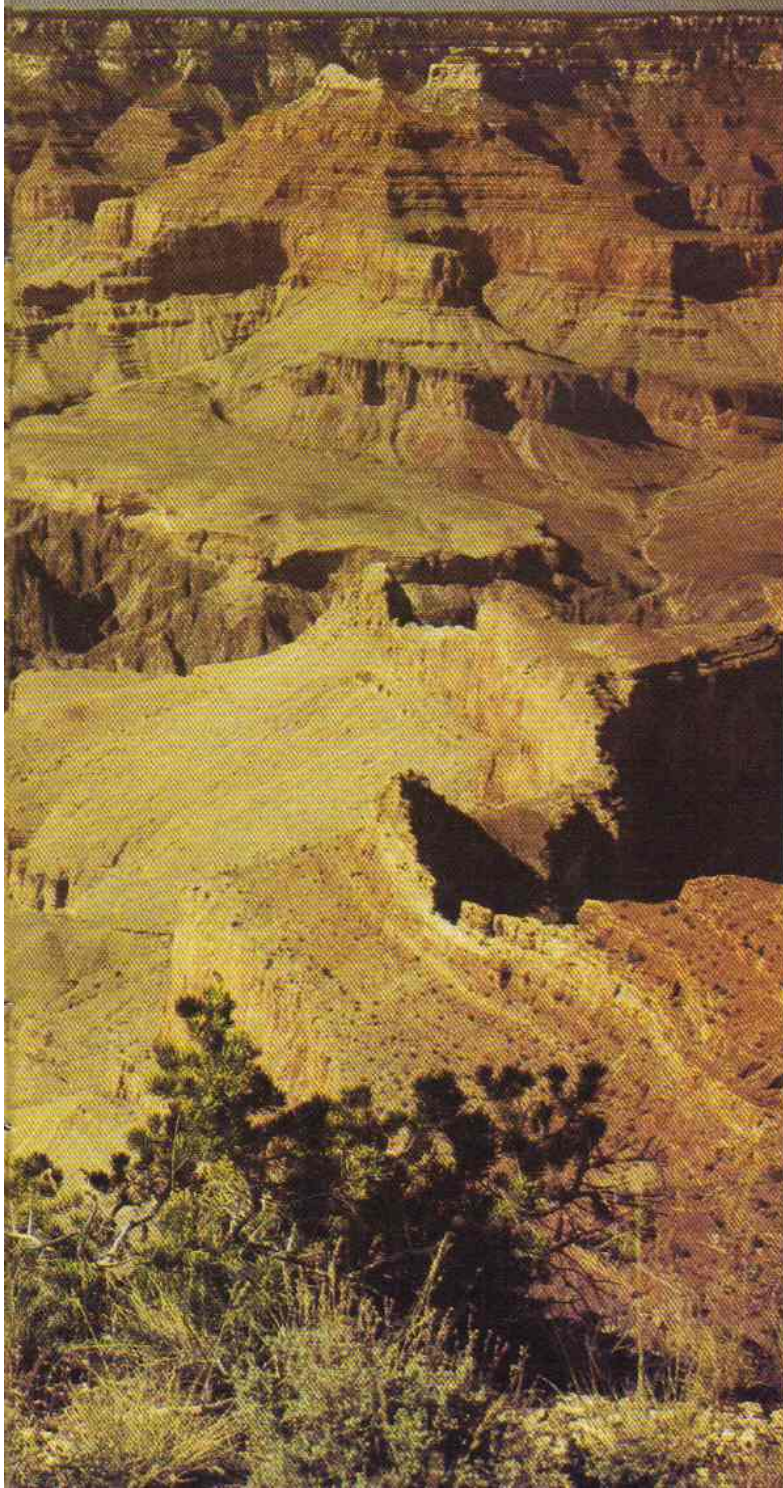
A full-page photograph of the Grand Canyon. In the foreground, a large, gnarled, dark-barked tree with green needles stands on a rocky ledge. The background shows the vast, layered rock formations of the canyon under a blue sky with scattered white clouds. The text 'A OF INSIDE' is overlaid in the top right corner.

A
OF
INSIDE

SLICE TIME

THE GRAND CANYON

by Carolyn Jabs



John Wesley Powell sat up straight in his wooden boat. Looking ahead, he saw only rapids—white water, tumbling over rocks and boulders. He looked from side to side and saw only steep walls of rock. He was scared to go ahead, but he had no choice.

Fearfully, he and his crew steered their boat right into the rapids. The river roared around them. Water splashed over the crew. The boat rocked up and down. For a moment, it looked as though the boat would hit a sharp rock and everyone would be dumped into the water. It seemed like they were in the rapids for hours. But finally, their boat made it to calmer water.

All this happened in 1869. Powell and his crew were the first people to travel through the Grand Canyon in a boat. The trip was very difficult. One of the boats got smashed when it went over a waterfall. Another broke into little pieces in the rapids. Luckily, no one got hurt. The men were often wet and cold. Some of them even gave up and tried to climb out of the canyon. They never made it home. But Powell went on. He collected scientific information about the Grand Canyon. And he lived to tell about its wild beauty.

Today, over two million people go to Arizona to visit the canyon each year. As you can see from the pictures on this page, it's still a "grand" sight. And now the canyon is more fun to explore. People can float safely down the river on rafts. Others ride mules down trails to the bottom of the canyon.

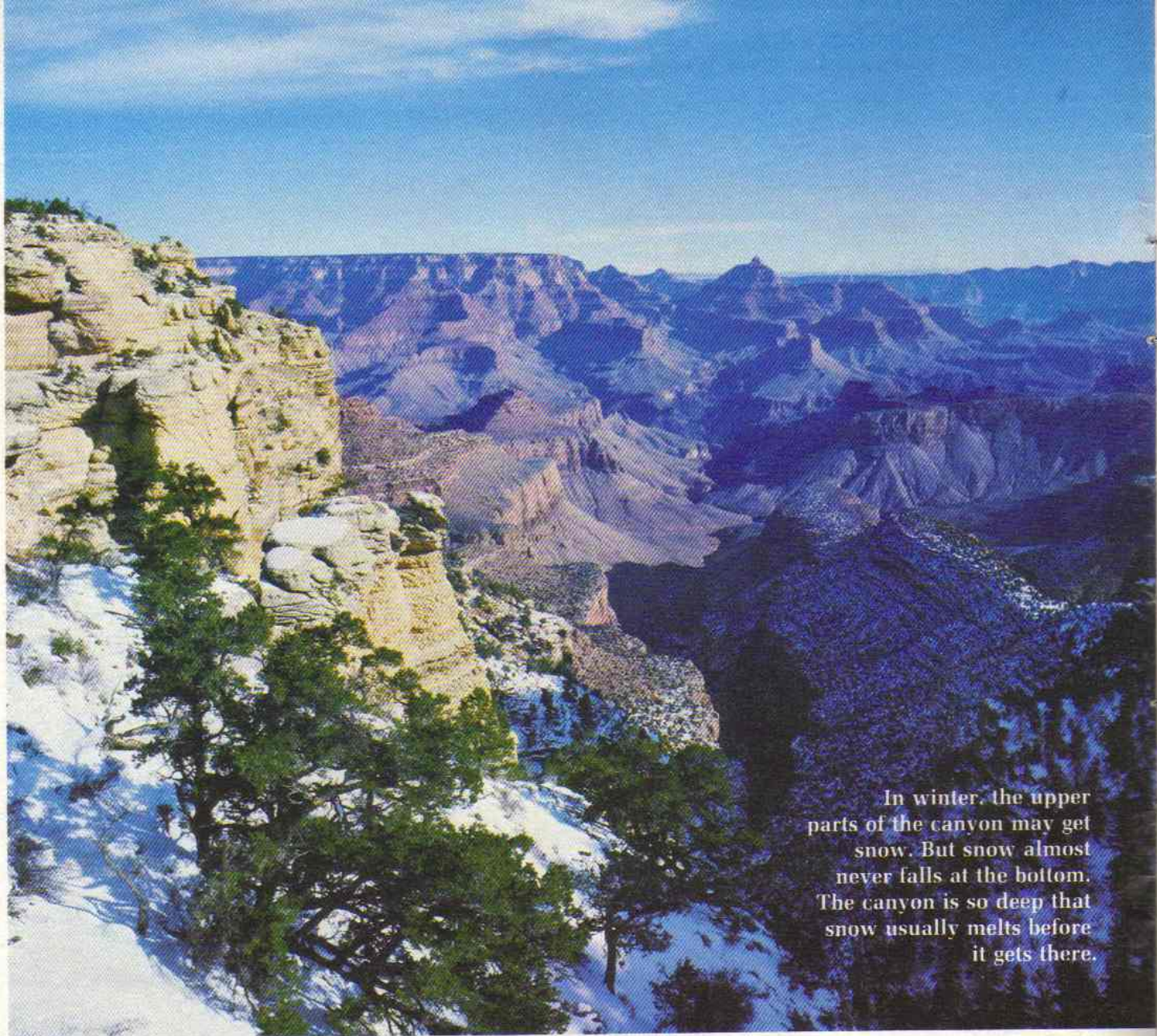
Scientists also visit the canyon to look at the rocks. These scientists who study the earth's surface are called *geologists*. Geologists have lots of questions about the Grand Canyon. They want to know why the rocks have such bright colors and such interesting shapes. They also want to know how the canyon got to be so deep.

An Old Legend

The American Indians were the first people to see the Grand Canyon. They told folk tales about it. One story tries to explain how the canyon was formed. According to the tale, one of the Indian gods hit the earth with a giant axe. This cut a deep ditch in the ground, forming the Grand Canyon.

Today, scientists know the canyon was made by the Colorado River. If you look closely at some of the pictures on page eight, you will see the river at the bottom of the canyon. But how could such a small river make such a deep canyon? ➡

Left: You are looking across the Grand Canyon at the south rim—a distance of 18 miles. Way down below is the Colorado River. Its flowing water began carving the canyon eight million years ago.



In winter, the upper parts of the canyon may get snow. But snow almost never falls at the bottom. The canyon is so deep that snow usually melts before it gets there.

It all began over eight million years ago. Back then, there was no Grand Canyon. The Colorado River flowed slowly across a plain. But deep in the earth, the rocks moved around. One part of the plain was pushed higher than the rest. That made the river flow downhill. It began to run faster.

When water runs fast, it carries dirt and sand along with it. You can see this for yourself. Fill a jar halfway full of water and add some sand. Put a lid on the jar and shake it. The sand and water will swirl together as long as the water is moving.

When the Colorado River began moving faster, it picked up a lot of sand. The sand scraped against the rocks over which the river was flowing. After a while, it wore away the softer rocks, just the way sandpaper wears away wood. Over millions of years, the water wore away more and more rock until it cut a deep path for the river. Today, parts of

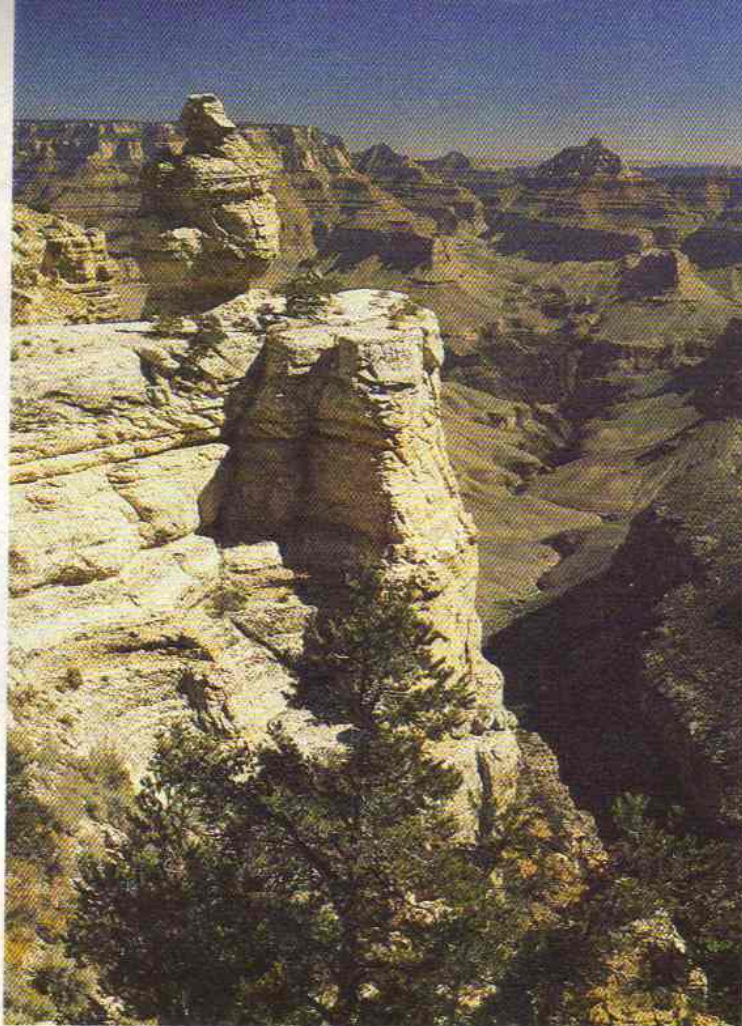
the Grand Canyon are more than a mile deep.

In some places, the canyon looks as if the river cut a slice right out of the ground. Like a slice of birthday cake, the canyon walls are made of different layers. Elsewhere, these layers of rock usually lie deep within the earth. But here the layers can be seen. Each one tells a different story. Scientists who know about rocks can read the walls of the Grand Canyon like a history book.

Reading the Rocks

Look at the stripes of color on the walls of the canyon. Every stripe is a different kind of rock. And each kind of rock was formed at a different time. The oldest rock, called schist (SHIST) is on the bottom. Scientists say it is 200 billion years old.

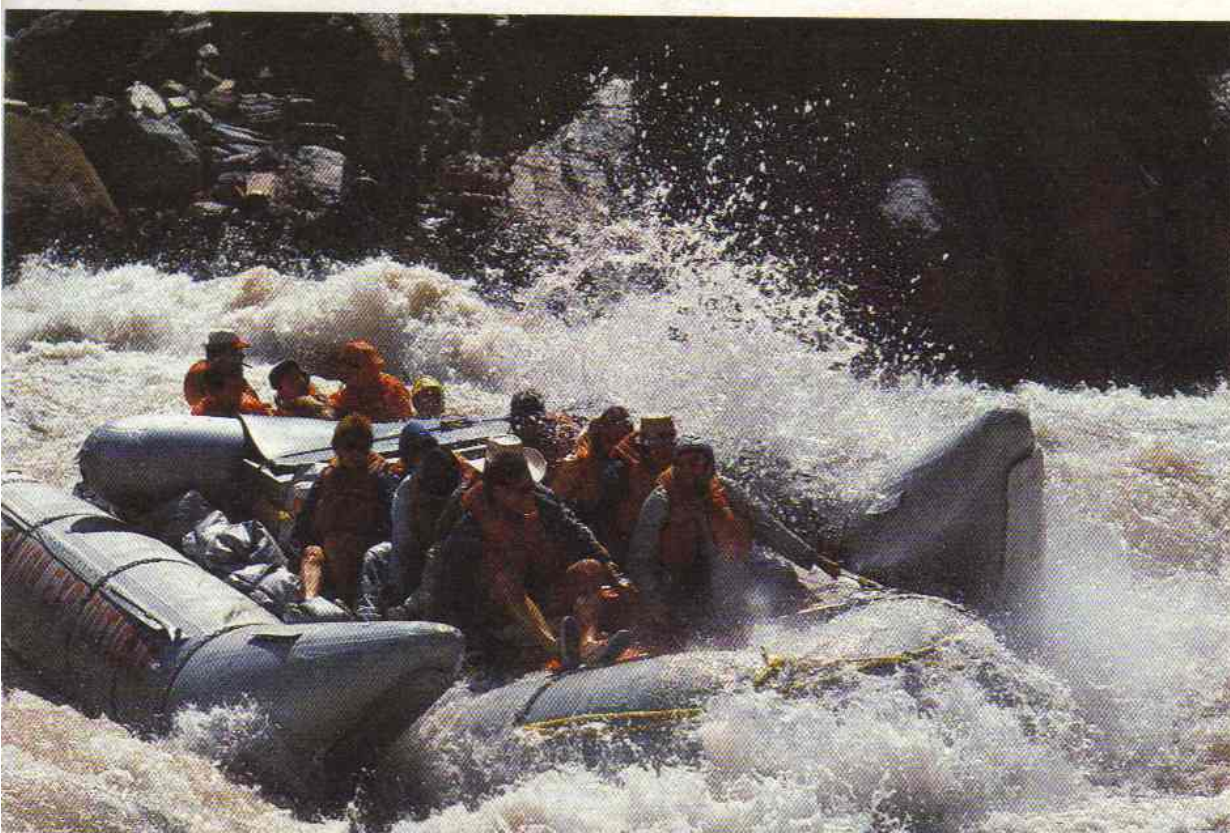
By studying the different layers of rock, they can figure out what was happening on earth long ago. The limestone layer contains fossils of little sea ➡



Above: Forces like dirt carried by the wind sometimes carve the rock into strange shapes. The rock formation on this ledge is shaped like a duck.



Above: Some visitors ride mules down to the bottom of the canyon. These animals are especially good at walking on the rough, steep trails.



Left: Others ride through the canyon on the wild Colorado River. This *pontoon* boat is filled with air. It makes the trip safer than the one Powell took with wooden boats, many years ago.

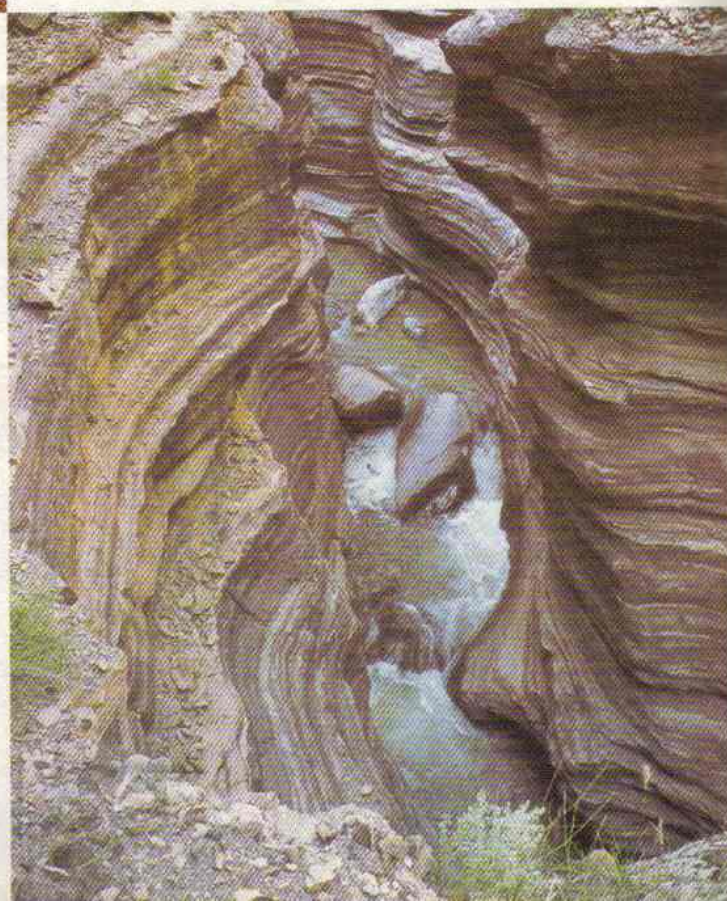


The Grand Canyon shows the power of moving water. **Left:** Most of the downward cutting was done by the Colorado River. The canyon was widened by other forces, including rain, wind and temperature changes. **Above:** Water slicing through rock becomes a waterfall. **Below:** A narrow side canyon. You can see how swift water has already cut through many layers of rock. When it was first formed, the Grand Canyon may have looked like this.

creatures. This means that Arizona was covered with sea water at one time. Another layer of rock is sandstone. That tells scientists that, at a different time, Arizona must have been a desert.

Of course, there are other canyons in the world. Not all of them were formed by flowing rivers. Some were made by glaciers and some were made by wind. But few are as famous as the Grand Canyon.

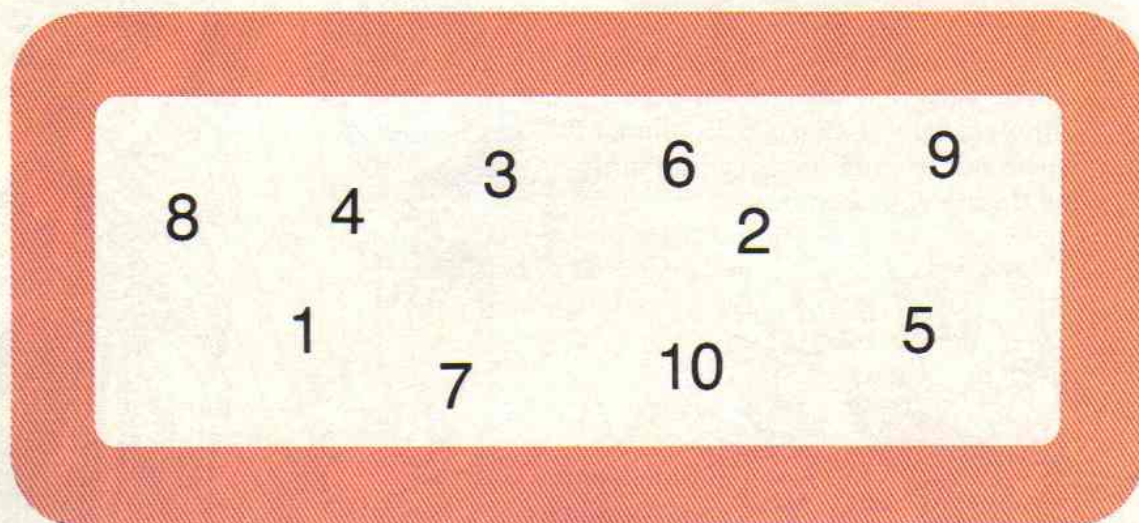
John Wesley Powell liked the Grand Canyon because it was exciting to ride down the river. Geologists like the canyon because it tells them so much about the history of the earth. But most people like the canyon because it is so beautiful. When the sun shines on the cliffs, the rocks look orange and pink, yellow and purple. Then people like to stand on the rim, look deep into the canyon and think their own thoughts. What does the canyon make you think of?



Do It!

1. Line Up

Start at number 1. Draw lines connecting the numbers, IN ORDER, up to 10. As you go, do not cross over any of the lines that you have drawn.



2. A Gift in the Lake

Start with the word "LAKE" in the top line. Change one letter at a time to make a new word for the next line. See if you can end up with the word "gift."

Answers on page 37.

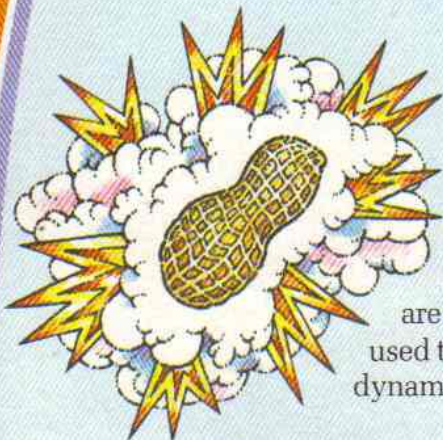
3. Animal Squares

1. Start with any letter.
2. Move one square at a time in any direction until you spell an animal. See how many animals you can find.



Factoids

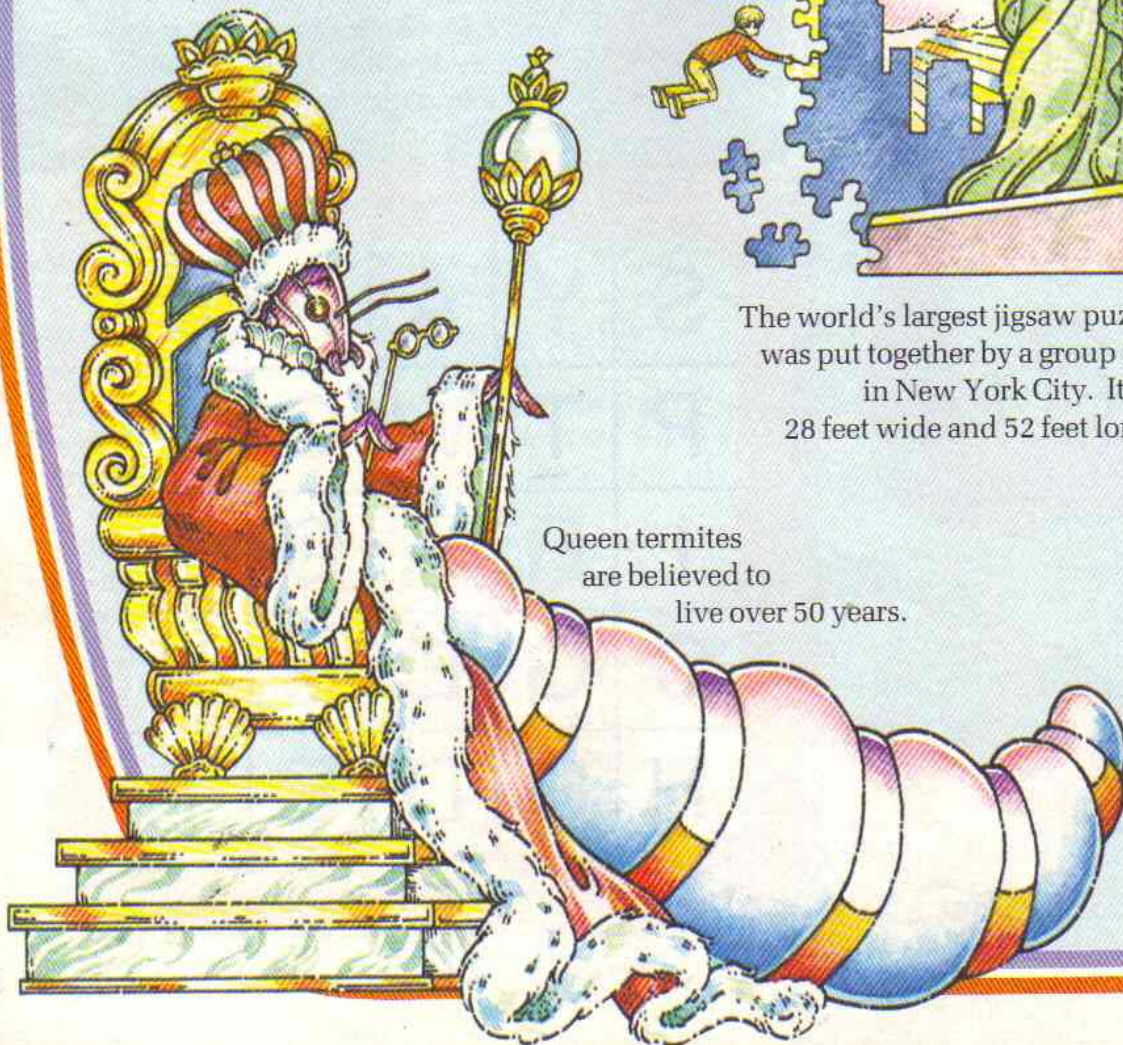
What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.



Besides tasting good, peanuts are sometimes used to make dynamite.

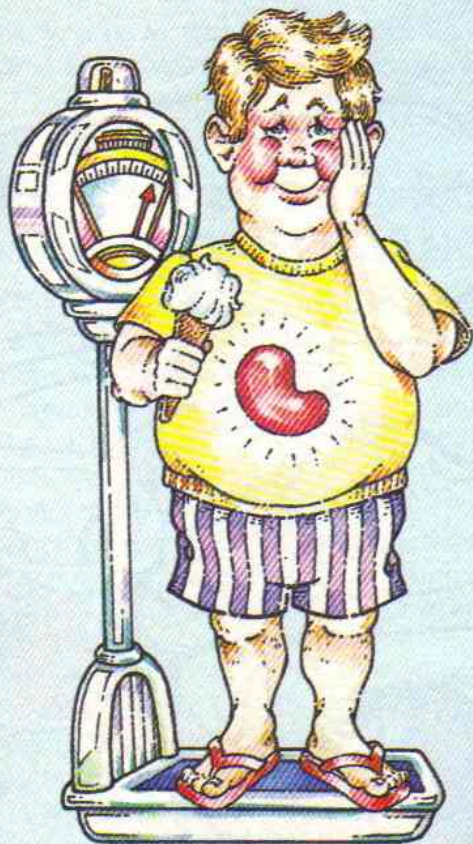


The world's largest jigsaw puzzle was put together by a group of kids in New York City. It was 28 feet wide and 52 feet long.



Queen termites are believed to live over 50 years.





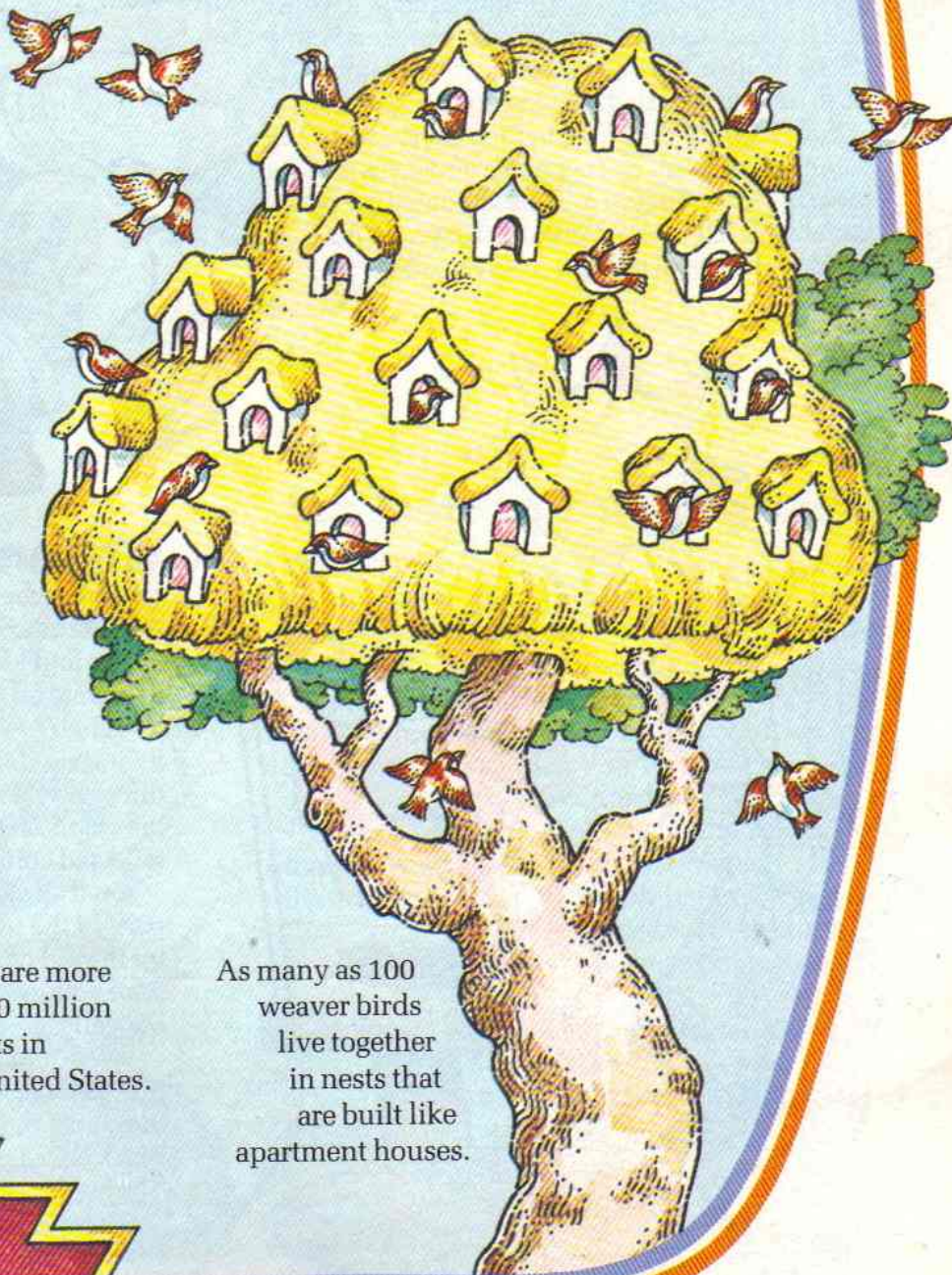
When you blush,
the lining of your stomach
also turns redder.



There are more
than 20 million
pet cats in
the United States.



On the average,
Americans make more than 6,000
phone calls every second.



As many as 100
weaver birds
live together
in nests that
are built like
apartment houses.

Any Questions?

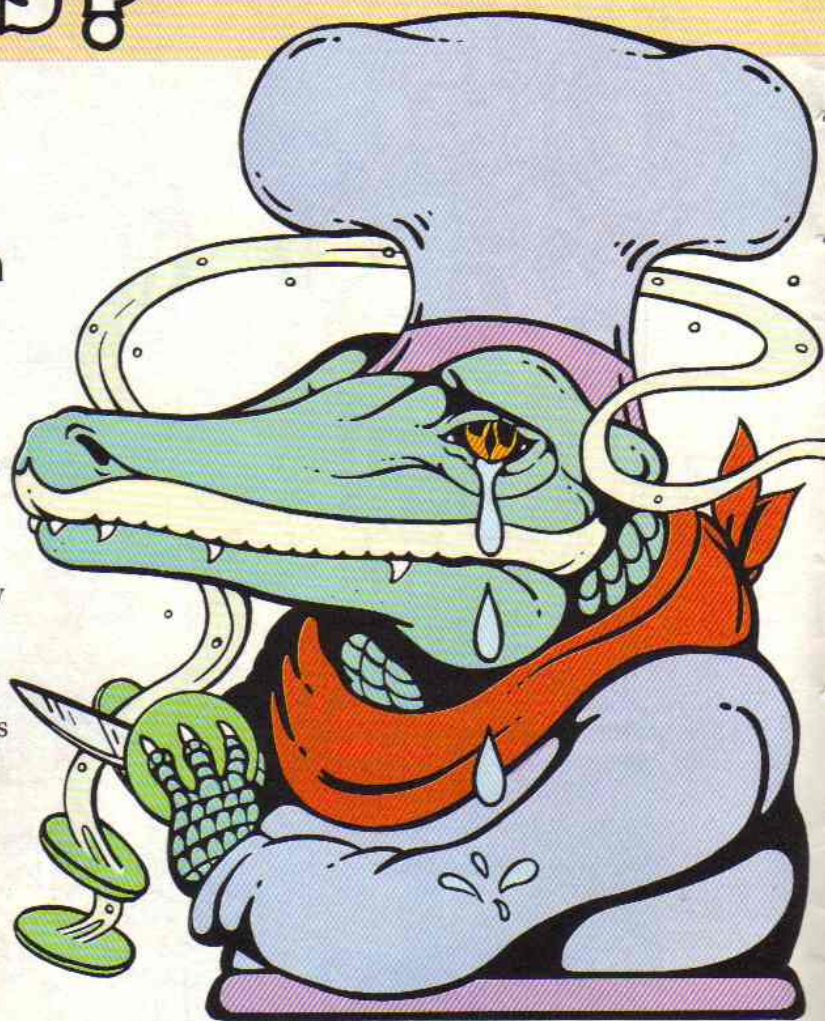
Why do your eyes water when you slice onions?

When you cut into an onion, tiny particles, too small to see, drift into the air. They are from the oil that makes an onion smell so strong. The particles float into your eyes and make them sting. That's when the waterworks start.

The bits of onion that reach your eyes mix with the salty liquid there. That produces acid. It's the acid that causes the stinging. Your eyes send out a call for help and your tears come to the rescue. They wash out the acid that's giving your eyes trouble.

You can help your eyes in their fight against the onion. The chemicals that make your eyes tear dissolve in water. So peel and cut the smelly vegetables under water. It's no use crying over sliced onions!

Question sent in by Buffy Begley, Palmyra, MO.



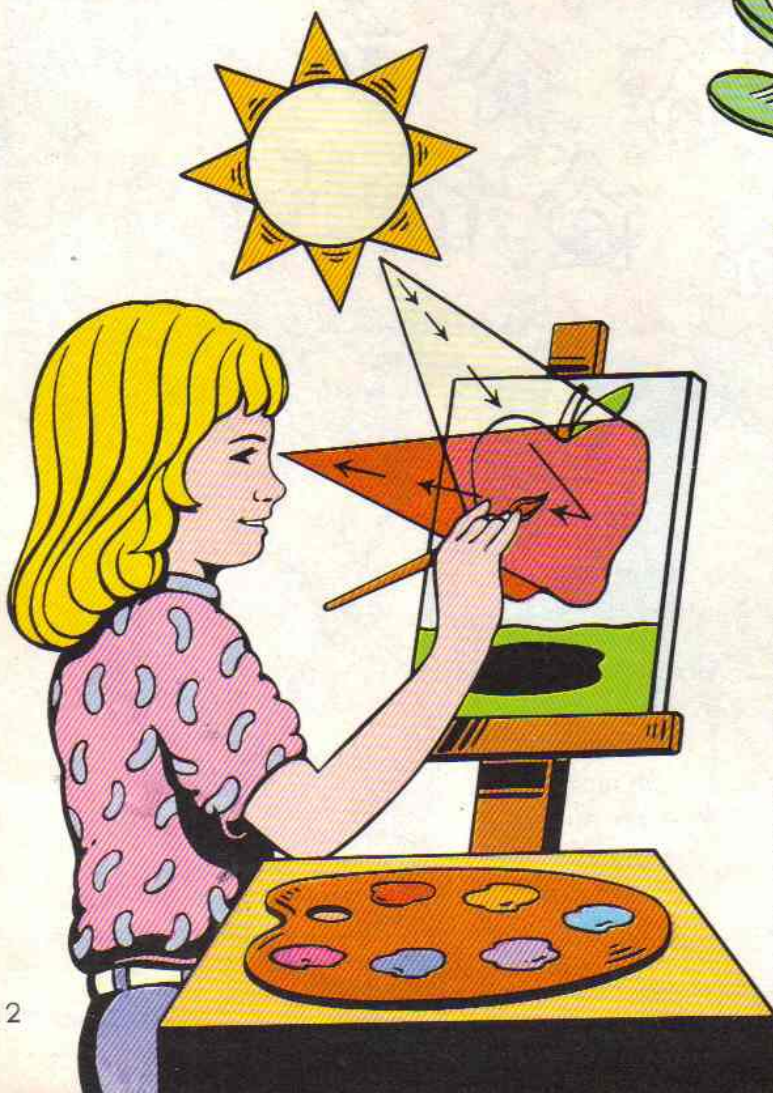
Why are there colors? That sunlight shining through your window contains all the colors of the rainbow—red, orange, yellow, green, blue, indigo and violet. The light looks white because the colors are all mixed together.

Light travels in waves. Each color hidden in white light has a different wave length. So each one acts differently. When white light hits an object, some of the colors are absorbed and some are reflected. The reflected colors are the ones you see.

A red apple looks red because it absorbs most parts of the white light which shines on it—except for the red part. That is reflected to your eye. So red is all you see. A yellow banana absorbs everything but yellow.

White and black are special. White things, like this page, absorb very little. They reflect almost all of the colors in white light right back to your eyes. Black objects absorb all the colors that hit them. They reflect almost nothing back to your eyes. So black is really no color at all.

Question sent in by Amy Wilcox, Kenniwick, WA.



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

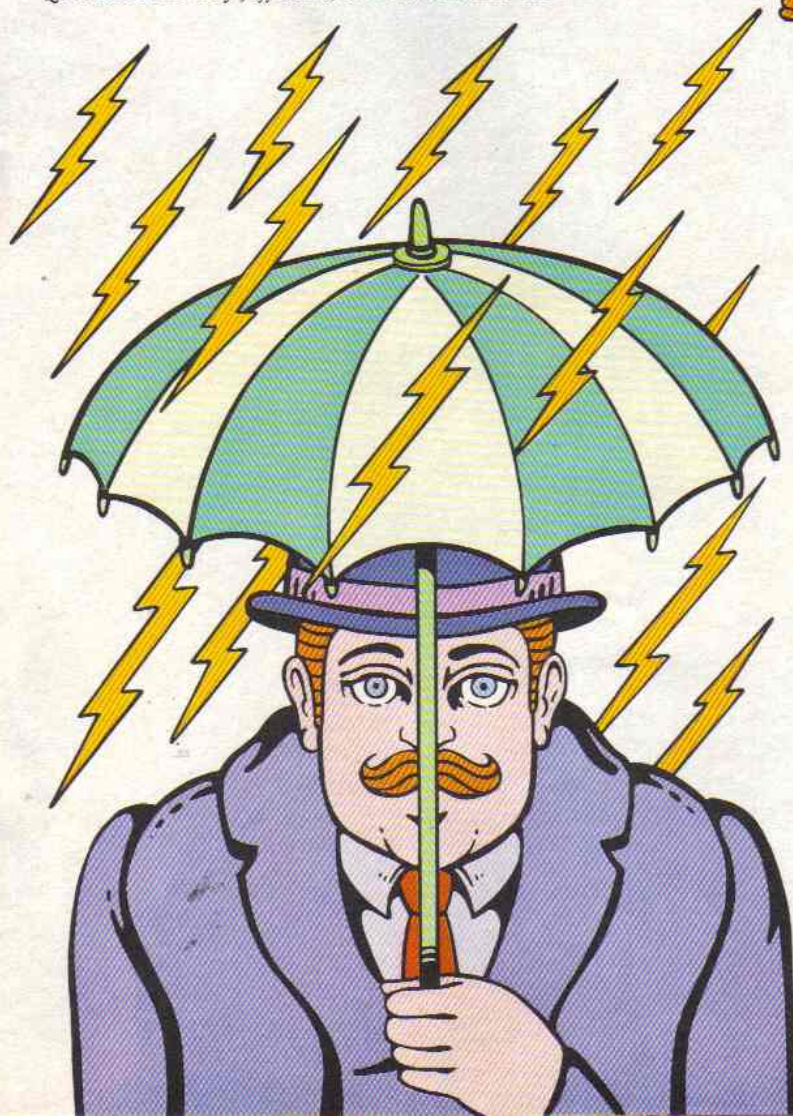
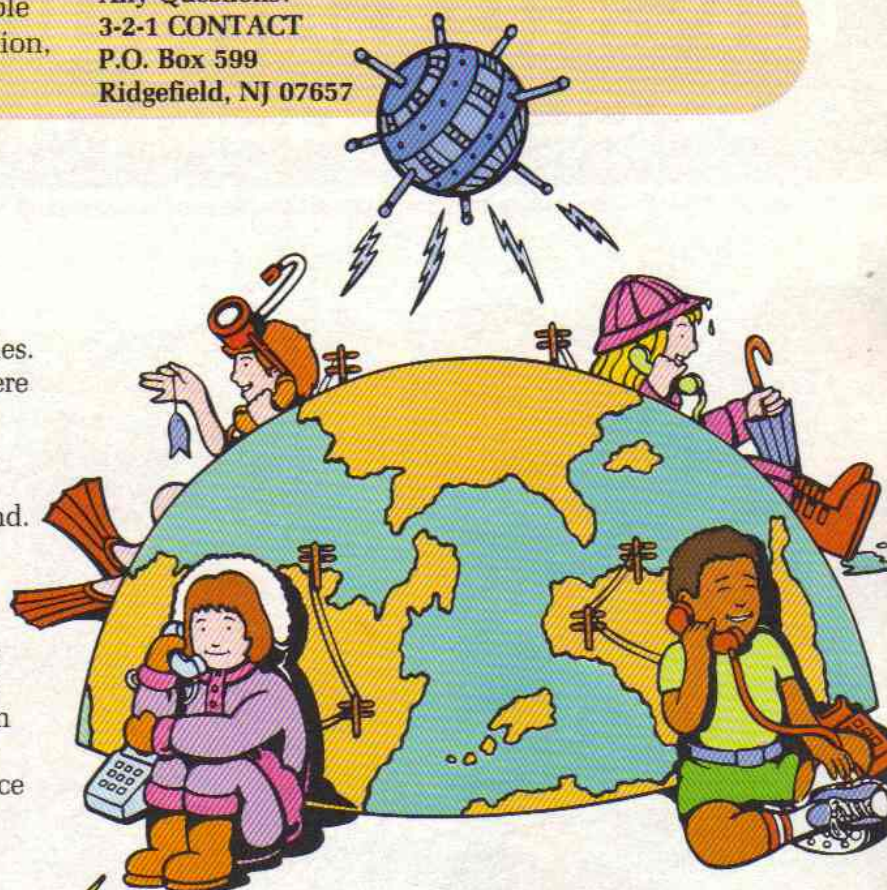
How does a long distance telephone call get there so fast?

About 35 million long distance calls are made across the U.S. each day. Part of a long distance call may travel along wires on telephone poles. It may also go through underground cables. But there is a good chance that, during most of its journey, your long distance call will travel through the air. These very fast signals are called *microwaves*.

Microwaves travel thousands of miles per second. They are often beamed across the country from towers spaced about 30 miles (48 km) apart. For longer distances, satellites are used.

A phone signal is sent from a tower near you up to a satellite orbiting above the earth. The satellite then beams the same signal to a receiving tower on the ground, thousands of miles away from where it started. Your voice has made a journey into space and back again in just a few seconds. Far out!

Question sent in by Jeff Pane, Stone Mountain, GA.



Can there be lightning without rain?

There sure can be. Lightning is a giant flash of static electricity shooting across the sky. It is caused by the buildup of electrical charges in the air. Usually that occurs in rain clouds. But not always.

When Mt. Saint Helens erupted last year, people saw lightning flash in the smokey cloud that poured out of the volcano. Lightning has also been seen during sandstorms and tornadoes.

Even though there can be lightning without rain, there is never lightning without thunder. Thunder is the explosive sound that lightning makes as it heats the air around it. Light travels faster than sound. This is why you always see the lightning before you hear the thunder.

Sometimes on a hot muggy summer night, you see faint flashes of heat lightning, followed by no sound at all. That doesn't mean the thunder does not exist. It's just too far away for you to hear.

Question sent in by Jennifer Friggin, New York, NY.

Grand Canyon Game

A RACE THROUGH THE RAPIDS

START

PLACE YOUR
FOUR BOATS
HERE

PEOPLE OF
GREEN RIVER
CITY
SEE YOU OFF
AHEAD 1

RIVER'S
SWIFT
CURRENT
CARRIES YOU
GO AGAIN

REACH
ENTRANCE
OF
GRAND CANYON
AHEAD 1

BOAT
WRECK

FIRE
BREAKS OUT
AT CAMPSITE
BACK 2

SPOT A
HUMMINGBIRD
AHEAD 1

BOAT
TURNS
OVER
RETURN
TO ENTRANCE
OF
GRAND CANYON

BATHE
UNDER A
WATERFALL
AHEAD 1

TAKE
SHORTCUT
AHEAD 1

HEAR
A WREN
SINGING
GO AGAIN

BOAT
WRECK

TRAVEL
10 MILES
TODAY
AHEAD 1

CLIFFS
SLOW YOU
DOWN
LOSE
A TURN

When John Wesley Powell and his crew explored the Grand Canyon, they faced all kinds of adventures. Play this game with your friends and you will share many of the same thrills and dangers!

How to Play

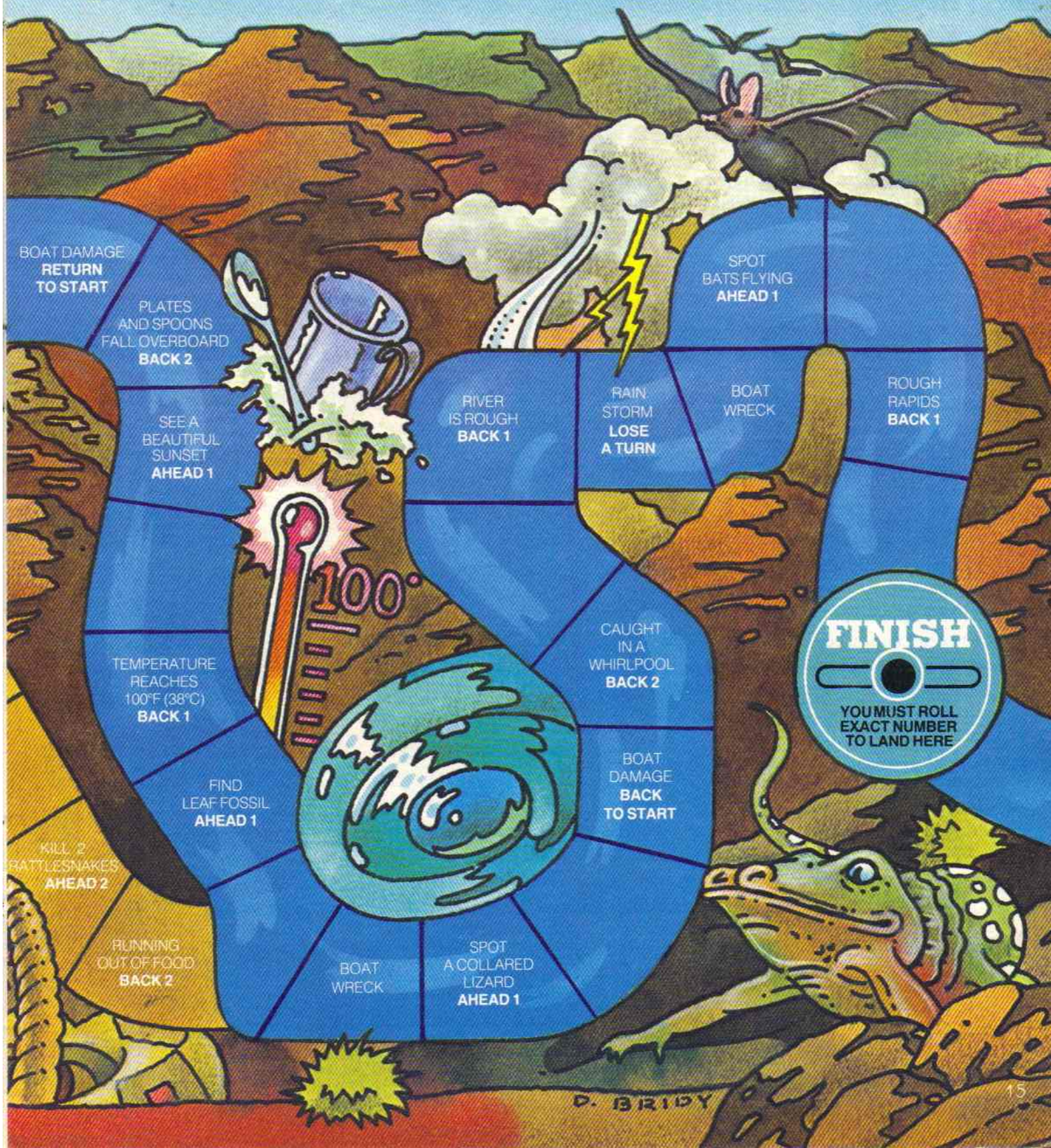
1. Each player has four coins. These are your boats.
2. Roll one of two dice to move around the board.
3. At each turn, you may move any boat already on

the board. Or you may start a new one. Different players' boats may stay on the same square.

4. If you land on a BOAT WRECK space, you must remove that boat from the game. If you wreck all four of your boats, you're out of the game.

5. You may use the brown dirt path only when you land on the space, "TAKE SHORTCUT AHEAD 1."

6. The first player to land one boat exactly on the FINISH circle is the winner.



The Stomach

by Megan Srine and
H. William Srine

Bet you can't put one hand on your head and one on your stomach. You can? Let's see.

Nope, you're only half right. You probably know where your head is. But did you know that your stomach was up high, right under your ribs? If you thought it was near your belt buckle, you had better keep reading.

Meet Your Stomach

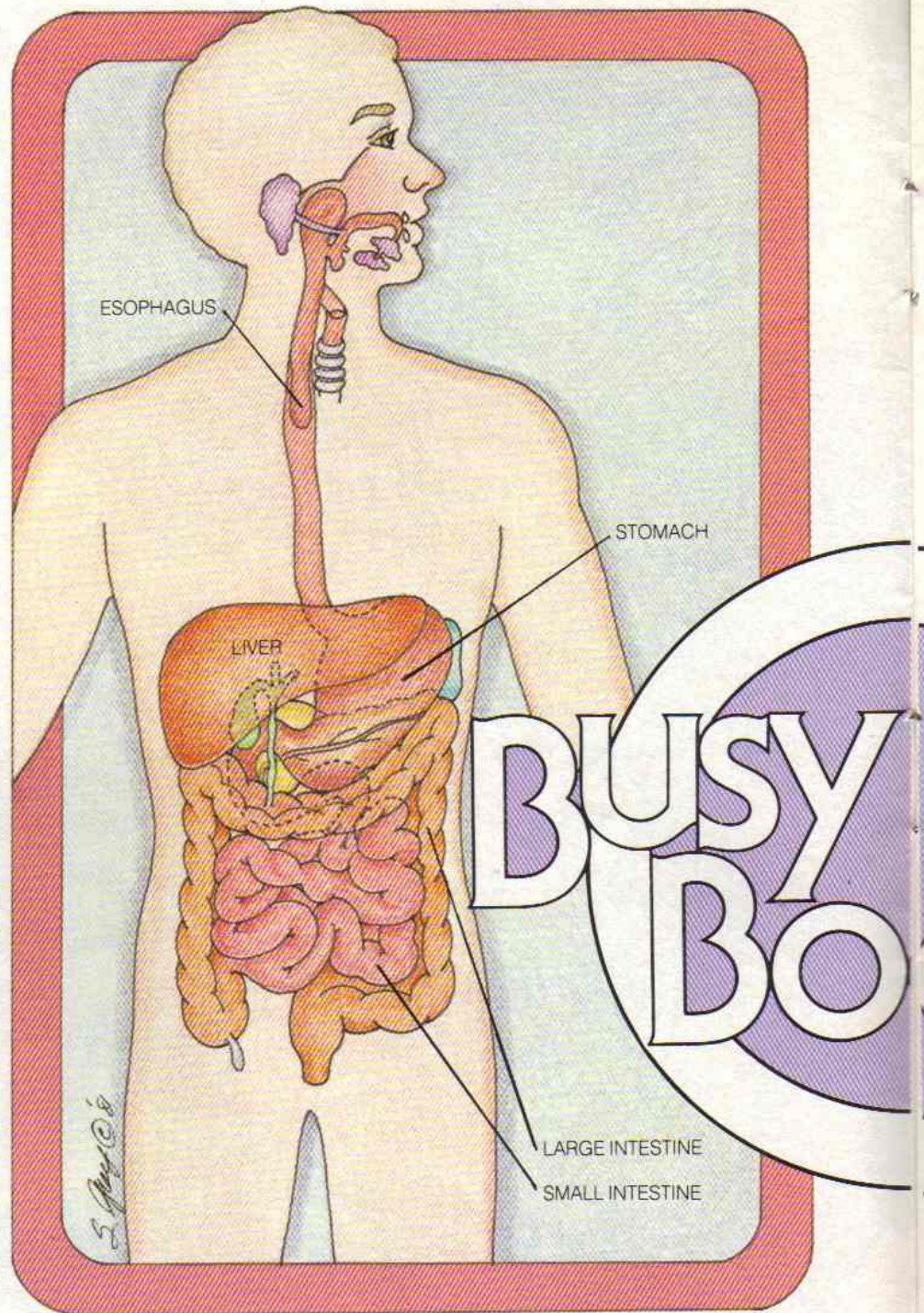
This should really be called "Meet Your Mouth and Your Food Pipe and Your Stomach and Your Small Intestine." The stomach is just one stop along the way for the food you eat. The whole digestive system is needed to turn food into the energy you need to live and grow.

Your stomach is a j-shaped pouch, big enough to hold almost a quart. The inside wall of your stomach is coated with a layer of mucus. You need this coating because of chemicals in your stomach that make up *gastric juice*. One of these chemicals is hydrochloric acid. This acid makes the juice so strong that it can turn almost anything you eat, from the softest piece of bread to the crunchiest carrot, into mush. It's so strong it can even dissolve the walls of your stomach. That is why the inside of your stomach is protected by a coating of mucus.

The stomach is just a short stop in the long trip your food takes during digestion. What else happens to what you eat? Find out in the exciting drama...

A Day in the Life of a Cheeseburger

Poor cheeseburger! It's having a hard life. Any-



thing that has to be digested has a long way to go—about 30 feet in the average adult. Of course the trip is a little shorter through your digestive system.

But first things first. As you chew that bite of cheeseburger, digestion has already begun. The saliva in your mouth begins to break down the food. That's the first step in turning lunch into something your body can use.

After chewing the cheeseburger, you swallow.

Nope, it's not in your stomach yet. Now the food is in your esophagus (is-SAHF-uh-gus). This is the food pipe that leads to your stomach. Muscles squeeze your food pipe together, pushing your lunch down towards your stomach. This squeezing is known as *peristalsis* (peh-ruh-STAHL-sis). It pushes that cheeseburger, plus the ketchup, onion, pickle and french fries, down to your stomach.

Your stomach now turns all that different stuff you ate into a mushy liquid called *chyme* (KIME). Again *peristalsis* helps. The squeezing of your stomach muscles churns up the food and digestive juices. After your food turns to *chyme*, it travels to the small intestine. Most digestion takes place there.

Like your stomach, your intestines are full of gastric and other juices which can dissolve almost anything you eat. To help finish the job, your intestine muscles squeeze in and out. That mixes up the juices with the digesting food. Yup. That's *peristalsis* again.

Your cheeseburger has now been turned into simple food that can slip into your bloodstream and help keep your body going. Your body absorbs these

nutrients the way a towel soaks up water. The food passes into small blood vessels that run all through the sides of your small intestine.

Some of what isn't absorbed moves along for more digestion, maybe in your liver. The rest heads for the large intestine. There, the water from your food is absorbed into your body. Finally, there is nothing left from your food that can be used. Your body gets rid of it as waste.

YUM!

Now that you have finished your cheeseburger, it's time for dessert. Take a look at what we have here. It's a banana split with hot fudge sauce, whipped cream and nuts. Makes your mouth water, doesn't it? That's just the point. Sometimes the thought or sight of food makes your mouth produce saliva. It can also make your stomach start producing gastric juices, even though there is no food in it.

On the other hand, just because something is in your stomach doesn't mean the juices will flow. Suppose your baby brother swallowed a couple of marbles. They would pass right through his digestive system without ever producing any gastric juice at all. ➡

dies



Experiment #1: Sugar Crackers

You already know that digestion starts in the mouth. Here's an experiment that shows how quickly your saliva works to start breaking down your food.

All you need are a few crackers.

Pop one into your mouth and chew it a lot. How much is a lot? At least 100 times. (No cheating!)

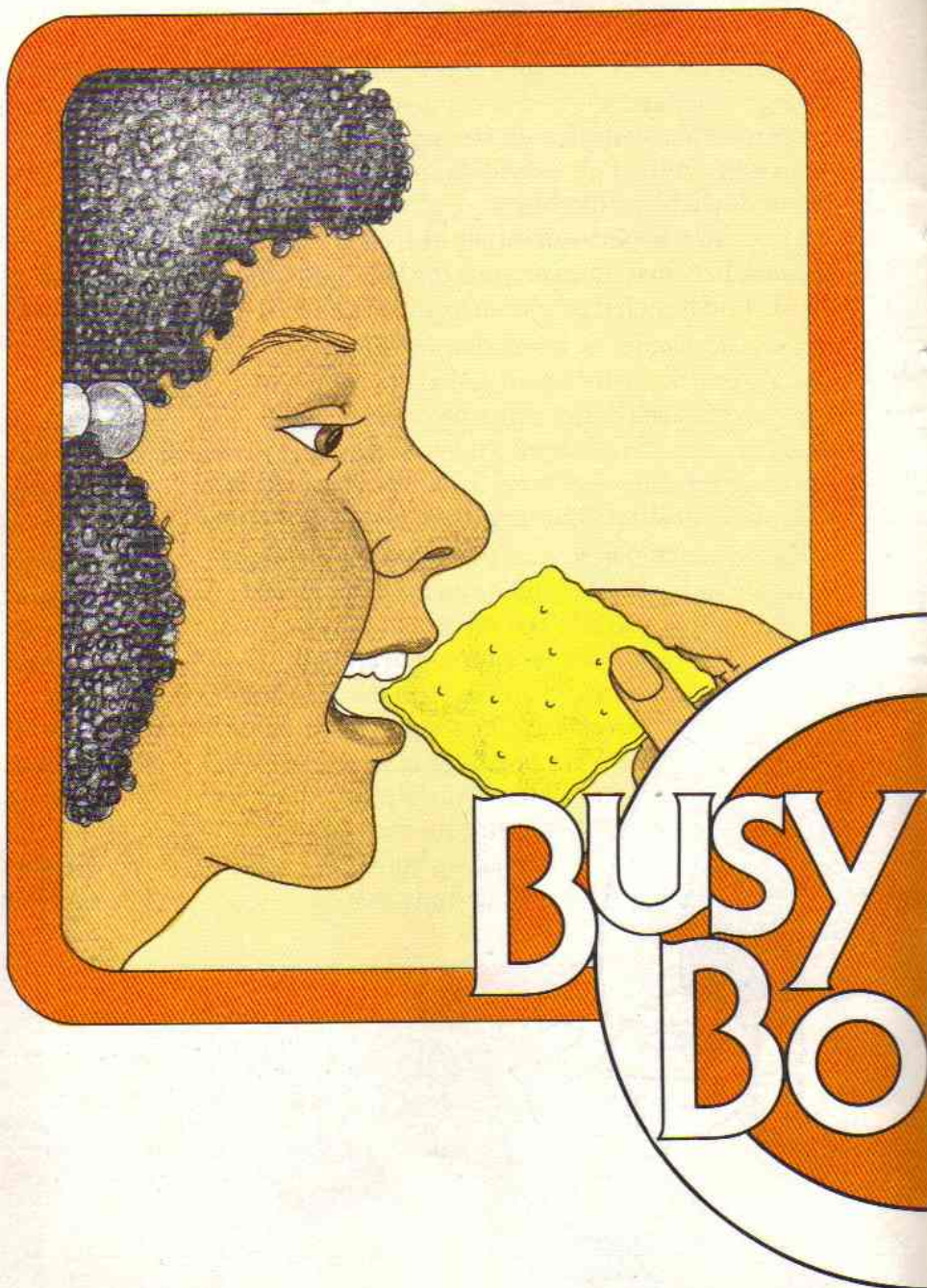
Now, what does the cracker taste like? It should taste a little sweet. That's caused by enzymes (EN-zymes) in your saliva that cause chemical changes to take place. That starchy cracker is changing into sugar.

Experiment #2: Eat!

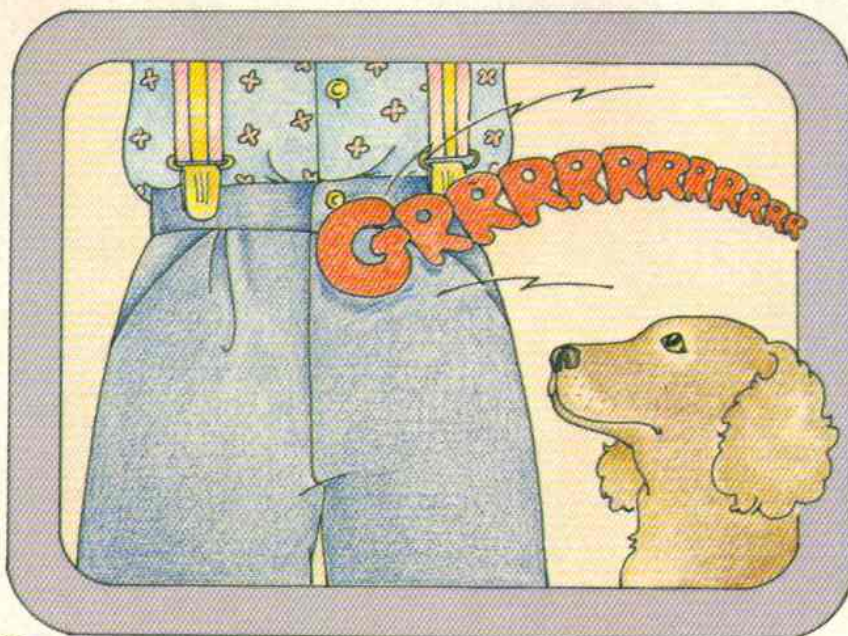
How often do you get hungry? The answer probably depends on *what*—not how much—you eat. Some foods keep you filled up for a few hours. With other foods it's zip!—into the stomach and zap!—out again. But which foods are which? And how often do you get hungry? This chart will help you keep track.

Starting tomorrow, fill in the first space with the time you eat breakfast. Keep the chart for lunch, dinner and snacks, too. Write down what you eat. Then write down what time you get hungry again. Do you get hungry the same times each day?

You may notice that after eating breads, cereals and cookies you get hungry faster than after eating hamburgers, french fries or a milk shake. That's because things with *carbohydrates*, like bread, are digested quickly. Fatty foods, like burgers, take longer to digest. In fact, fats tend to slow down digestion a lot. If you eat a big turkey dinner, it could take 20 hours to leave your stomach!



| When You Ate | What You Ate | When You Became Hungry Again |
|--------------|--------------|------------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |



Pardon My Borborygmus

Do you believe that word? What a way to say your stomach is grumbling.

The gurgling sound you hear when you're hungry is just a little watery food and a lot of air churning together. It's brought on by hunger signals from the brain. The signals start the stomach muscles squeezing in and out, or *contracting*. The result is hunger pains.

So next time your stomach embarrasses you by talking too loudly in public, just say it's *borborygmus* (BORE-bore-IG-muss). With a mouthful like that, no wonder your stomach is making noise!

Gut Reaction

Lots of things can make you sick to your stomach. But no matter what the reason, the results are always the same. A signal goes out from your brain: "Prepare to throw up."

The signals to vomit travel down from your brain. They trigger a muscular ring, called the sphincter (SFINK-ter), to open at the top of your stomach. Another one near your esophagus closes. Your stomach starts churning. Your diaphragm (DIE-uh-fram)—a muscle right under your lungs and over your stomach—moves down real hard. It shoves your stomach so quickly that there's no place for the food to go but up and out. It may be messy, but it works to get rid of whatever is making you sick.

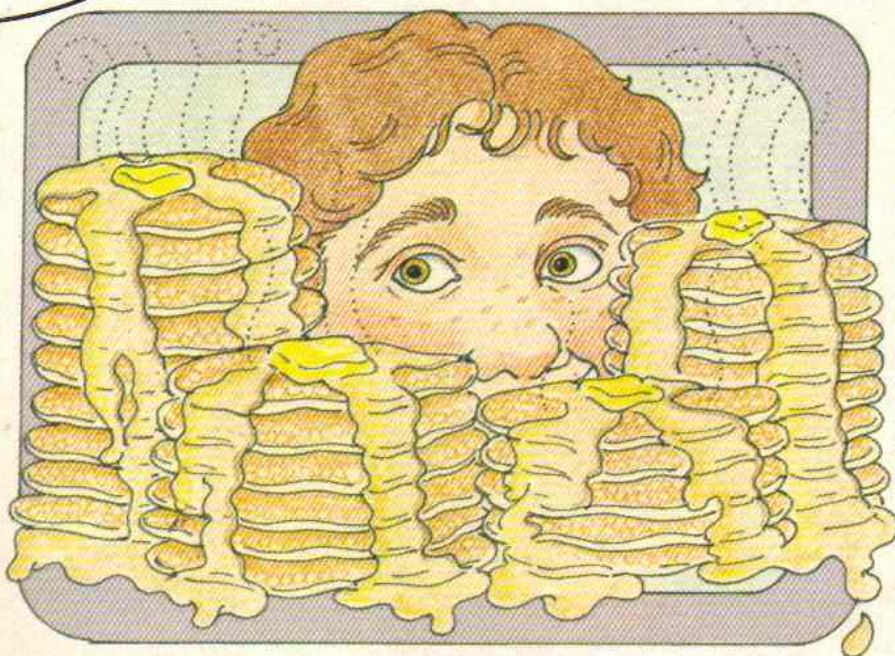
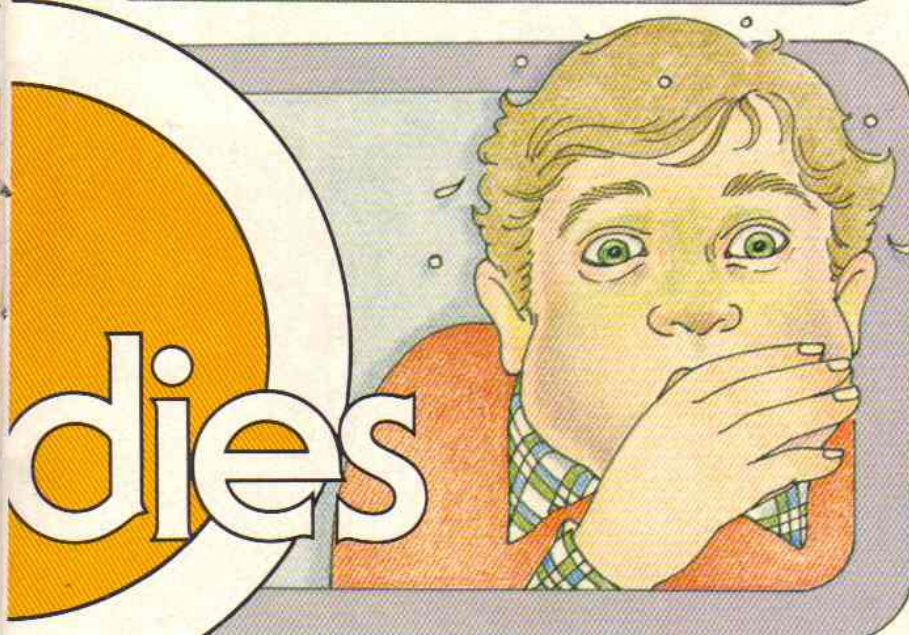
Can You Stomach This?

Here he is! The Champ! The biggest eater of all time! Peter Dowdeswell holds nine all-time eating records in the *Guinness Book of World Records*. His best ones are:

- Fourteen hard-boiled eggs in less than one minute.
- Three whole lemons (including skin and seeds) in 22 seconds.
- Sixty-two pancakes (with butter and syrup) in seven minutes.

Other people have also set records that are hard to swallow. For instance...

- Allen Peterson ate over 20 hamburgers with buns in three minutes.
- "Bozo" Miller ate 27 chickens in a sitting.
- John Lawrence ate 2,353 baked beans, one by one, with a toothpick, in half an hour.
- Mr. Lotito ate his entire bicycle in 15 days in France.



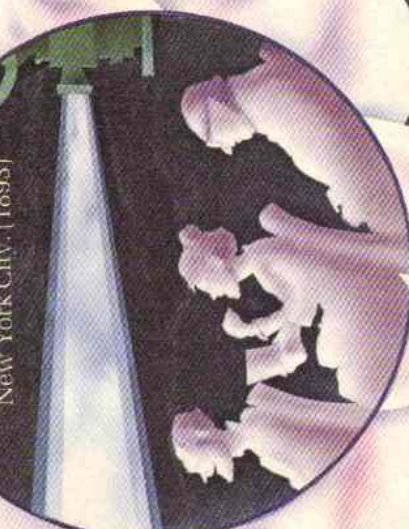
1

Construction begins in Chicago on the world's first skyscraper. (1884)



9

The first moving picture is exhibited in New York City. (1893)



13

2

Astronaut Alan Shepard becomes the first American to fly in space. (1961)



10

The transcontinental railroad is completed in Promontory Point, Utah. (1869)



16



12

Birthday of Baron von Justis Liebig, discoverer of a way of silvering glass to make mirrors. (1803)

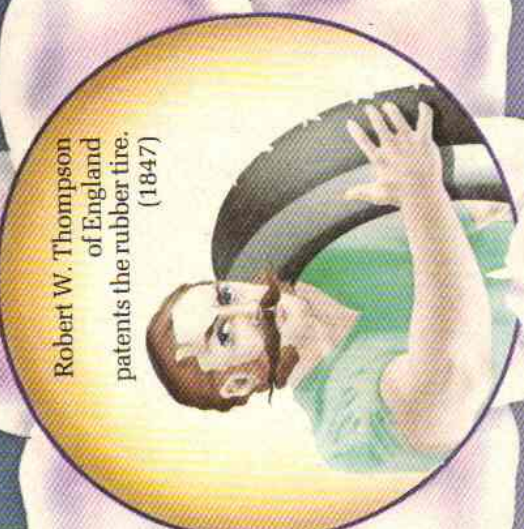


18



8

Robert W. Thompson of England patents the rubber tire. (1847)





Air mail postage stamps are introduced. (1918)

21

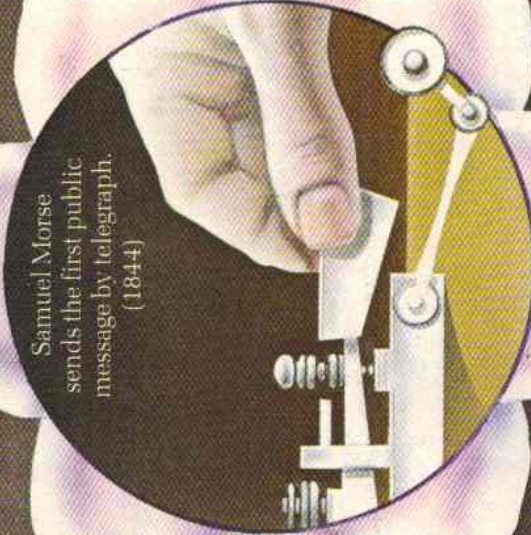


The American Red Cross is founded. (1881)



Junko Tabai becomes the first woman to climb Mt. Everest, the world's tallest mountain. (1975)

24



Samuel Morse sends the first public message by telegraph. (1844)



The earth passes through the tail of Halley's comet. (1910)

27



A bottle is dropped into the Pacific Ocean in 1947. It will be found 21 years and 25,000 miles later in the North Sea.

S M T W T F S

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Earth Days

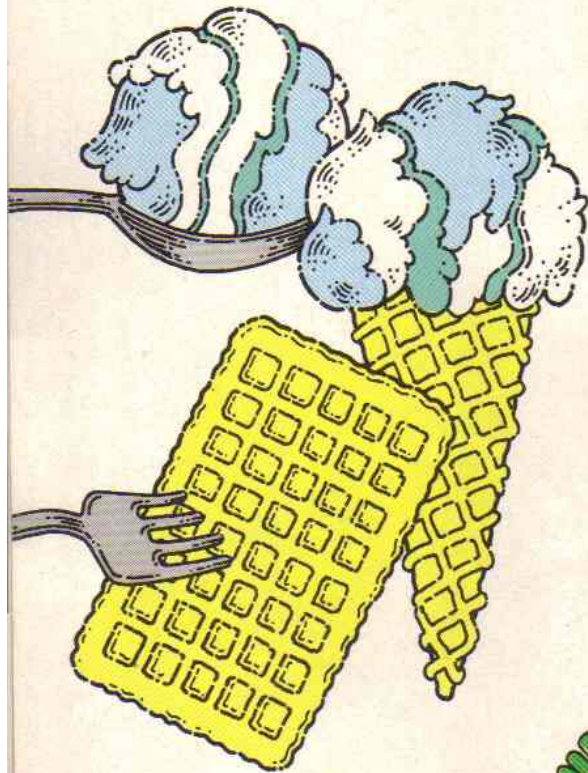
May

David
Feldman
'21

List of the Month

Bright Ideas

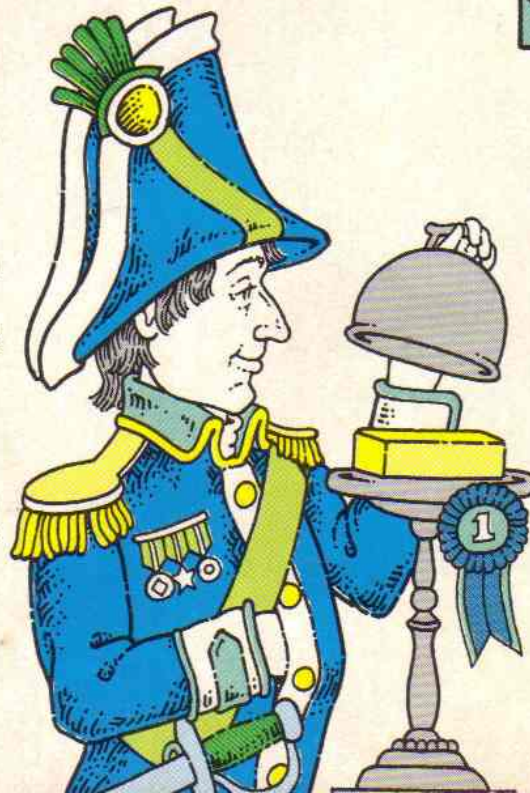
Everyone knows that Thomas Edison invented the light bulb. But who invented really important things, like chewing gum, soda pop and ice cream cones? Keep reading and find out.



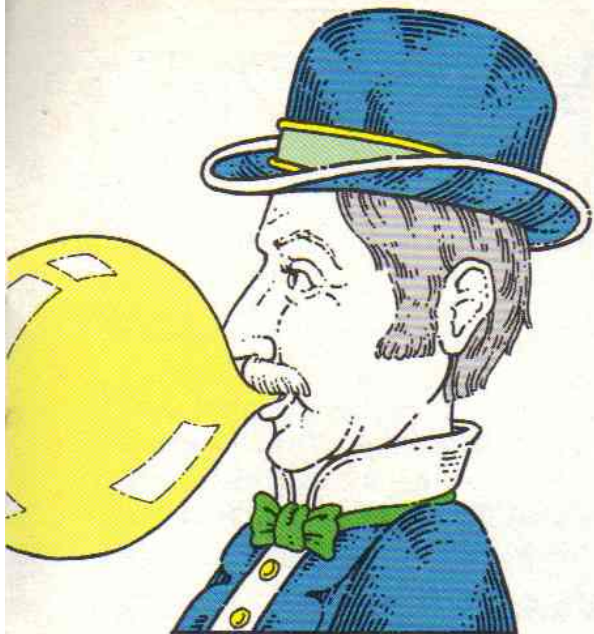
Cool Cone Many ice cream experts say the first person to think of the ice cream cone was Ernest Hamwi. Ernest was selling waffle-like pastry called *zalabia* at the 1904 World's Fair. Next to him was a man selling dishes of ice cream. Business was so good that the man soon ran out of dishes. Hamwi got an idea—roll *zalabia* into cones and put ice cream inside. The cones were an instant success!



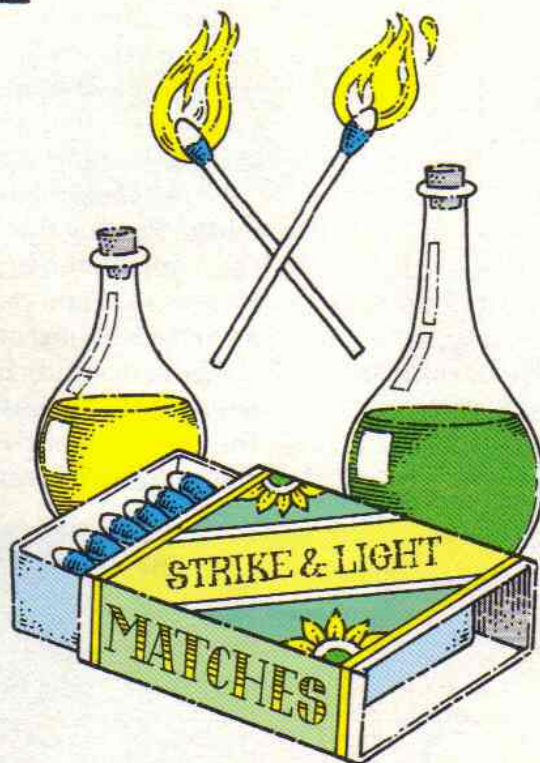
Better Butter A French general, Napoleon, was upset. The butter his soldiers carried on long trips always spoiled. So, in 1869, he held a contest. Could someone make a butter substitute that would last longer? A man named Hippolyte Mege-Mouries mixed beef fat, water and milk to create *oleomargarine*. He won the prize. His margarine became popular in Europe. After that, it spread all over!



Crazy Cart Years ago, Sylvan Goldman ran a grocery store in Oklahoma City. He felt sorry for the customers. As they shopped, they struggled through the store, trying to hold onto their purchases. So in 1936 Goldman built something to help them—a shopping cart. First he fastened two folding chairs together. Then he put wheels on the legs, and set baskets on the seats. It looked weird, but it worked!



Pop Goes the Water What do you get when you add carbon dioxide gas to water? Soda pop! Joseph Priestley found the secret of giving water that soda fizz over 200 years ago. But plain soda water wasn't exciting. About 1807, a Philadelphia druggist named Speakman became one of the first to add fruit flavors to soda pop. But some of the flavors back then were strange. Anyone for celery soda?

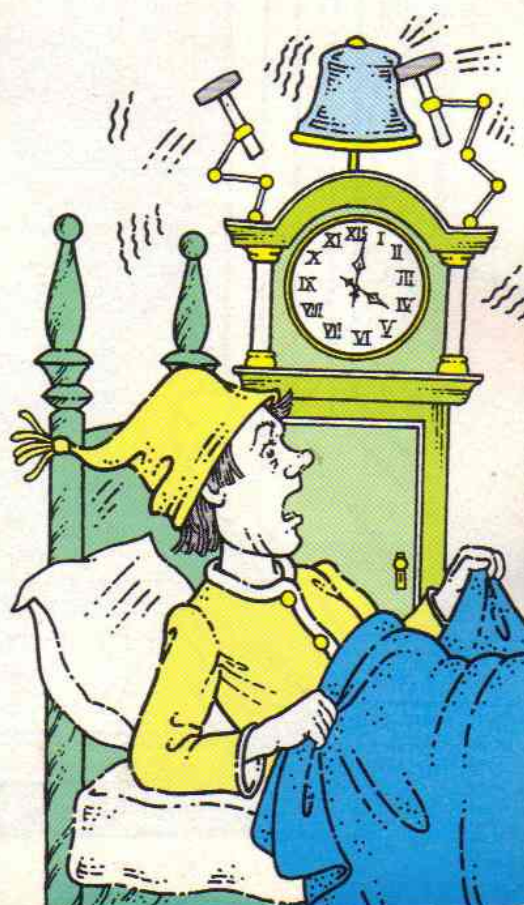


A Hor Idea How do you light a fire without matches? You might rub sticks together. You could even try mixing chemicals that burst into flame. In 1827, John Walker put this idea to work. He coated the ends of small sticks with chemicals. He then rubbed them on pieces of sandpaper. The heat from the rubbing made the chemicals burn. Soon, the "strike and light match" caught on like wildfire!

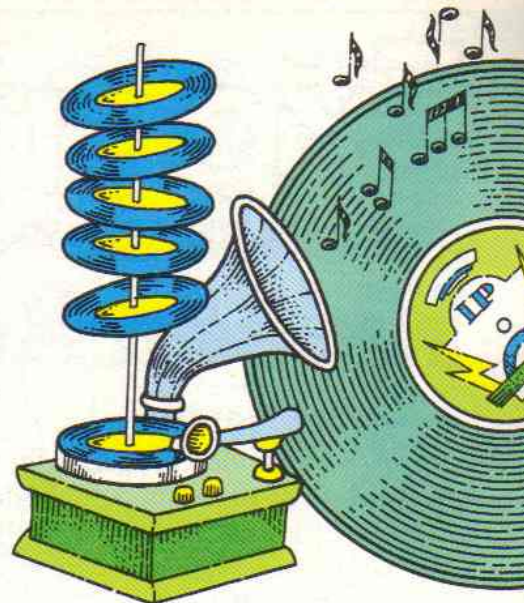


An Alarming Invention

Levi Hutchins wanted to get up each morning at four o'clock. But he was always oversleeping. Levi needed something to wake him at the same time each day. So in 1787 he gave the job to one of his clocks. He fixed a bell to its inside. When the clock's hands pointed to 4:00, the bell would ring. Thanks to his new alarm clock, Levi never overslept again.



A Groovey Idea Years ago you only got 10 minutes of music on each side of a record. Peter Goldmark loved music, but hated getting up all the time to change records. So, in 1948, Peter invented a record that had more grooves and would spin more slowly—the long-playing album. With records that had much more music on each side, people could finally enjoy songs without interruption.



Experiment

Hidden Rainbows

by Joanna Martin

In *Any Questions?* you read that white light is made of seven different colors. Did you know that you can break up that white light into its colors? It's easy! Here are two ways to do it.

What You Need

A pocket mirror

A tray of water A flashlight

Different objects made of glass. You might try jewelry, dishes or glasses. Objects with several different sides are best.

What You Do

1. On a sunny day, place the tray filled with water so that the light shines into it. Rest the mirror against one side of the tray, as you see in the picture. Make sure the mirror is tilting at an angle facing the sun. If the light hits the mirror just right, you will see a rainbow on the ceiling.

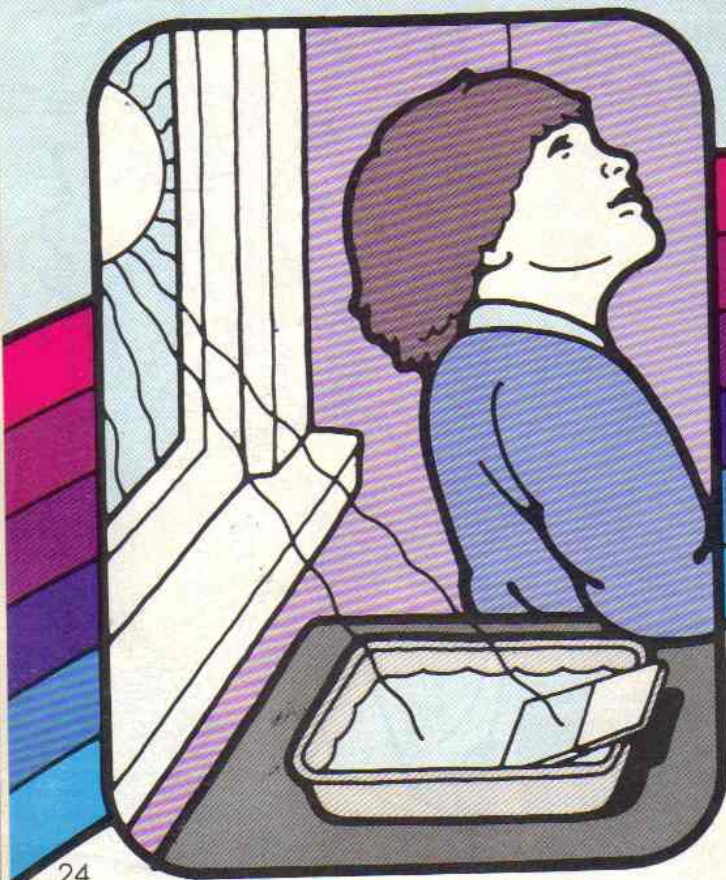
2. In a dark room, hold each glass object you collected up to a flashlight. Turn the pieces of glass around, so that the light hits them from different angles. Rainbows should appear on the walls, ceiling or floor.

Why It Works

The colors you see in the rainbows you have made are in any beam of white light. When all the colors come into your eyes together, what you see is called white. But if you spread the color out, you can tell one color from another.

When sunlight comes into your room, it is white. Passing through the water in the tray, the colors in the light are spread out. This happens as light passes into the water tray and again as it comes out.

The same thing happens in step #2. This time the white flashlight beam is spread out as it passes through the glass. Again, you are able to see all the colors in the rainbow.





Pocket Zoo

Animals of the African Grasslands

This month your animals come from the grasslands of Africa, also known as the savanna (suh-VAN-uh).

Rainfall occurs on the savanna for a short time during the summer. Together with warm temperatures, the rain produces tall grasses. As the dry season approaches, the plants die. The land becomes barren.

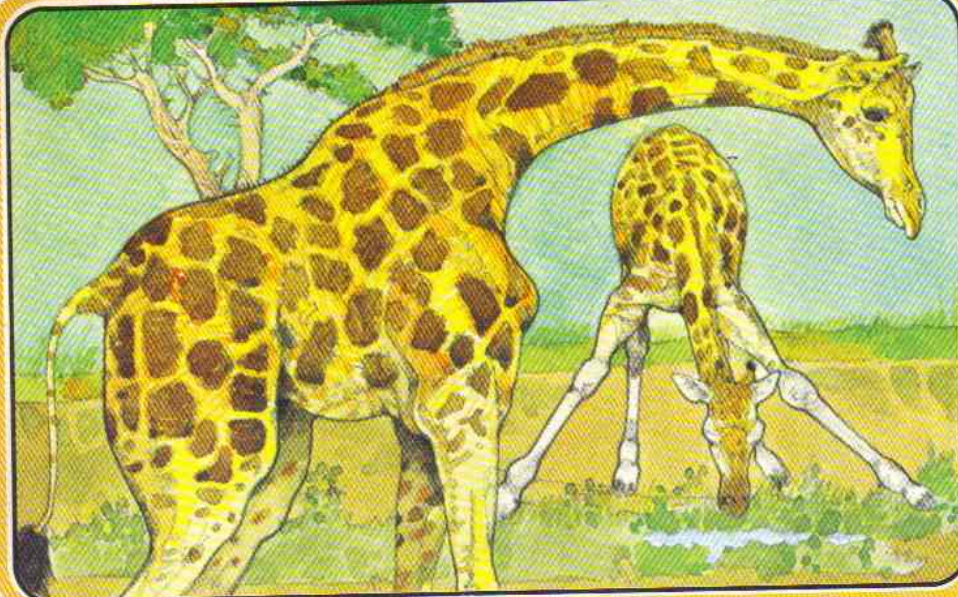
Getting enough water to drink is a problem for grassland animals. Many of them move from place to place, following the rain that fills water holes and makes the grass grow.

How to Make Your Pocket Zoo

To make your animal cards, you need scissors, 4" x 6" index cards (or pieces of cardboard the same size) and some glue, paste or tape.

1. Cut out your six animal cards along the dotted lines.
2. Paste or tape the animal to one side of the index card. Do this so that the information about the animal hangs over the side. (picture below)
3. Now fold the flap with the information so that it is on the back of the card. Glue this side, too.
4. Use the extra space on the back for anything else you might want to write about each animal. Your pocket zoo is ready.





Giraffe

Category: Mammal

Size: Up to 18 feet (5.4 m) tall.

Weight: From 1,800 to 3,000 pounds (710-1,350 kg).

Length of Life: About 20 years.

Home: Open areas.

Food: Plants, leaves and grass.

Fact: The giraffe is the world's tallest animal. Its long neck allows it to eat leaves in trees that other animals cannot reach. To get a drink of water, the giraffe must spread its long legs wide apart. Then it lowers its head. Between each drink, it looks up, watching for danger.

Scientific Name: *Giraffa camelopardalis*



Secretary Bird

Category: Bird

Size: 4 feet (1.2 m) high at the shoulder; its wings measure 7 feet (2 m) across.

Weight: 10 pounds (4.5 kg).

Length of Life: 20 years or more.

Home: It nests in a tree or bush.

Food: Frogs, insects, lizards, small tortoises and snakes.

Fact: The secretary bird got its name from the unusual feathers on the back of its head. It reminded people of the feather pens that secretaries carried behind their ears many years ago.

Scientific Name: *Sagittarius serpentarius*



Armadillo (ARD-vark)

Category: Mammal

Size: About 5 feet (1.6 m) long, including its tail.

Weight: 130 pounds (60 kg).

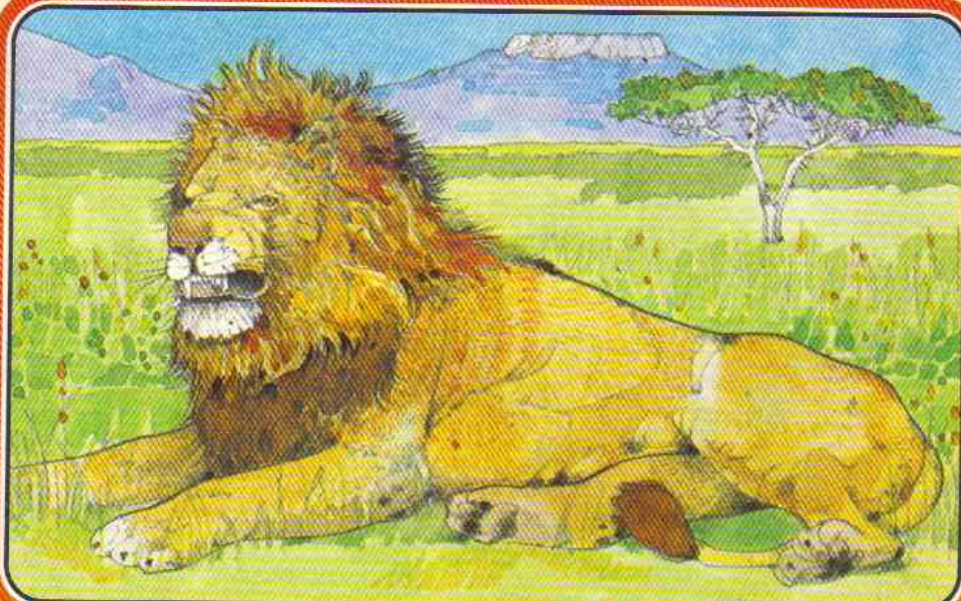
Home: Holes in the ground which it makes itself.

Length of Life: Up to 10 years in captivity.

Food: Ants and termites.

Fact: The armadillo is an ant-eater. It uses its sharp claws to rip open nests of ants and termites. Then it catches the insects with its 18-inch-long sticky tongue.

Scientific Name: *Orycteropus afer*



Lion

Category: Cat

Size: 4 feet (1.3 m) tall, 7 feet (2.3 m) long.

Weight: Up to 400 pounds (180 kg).

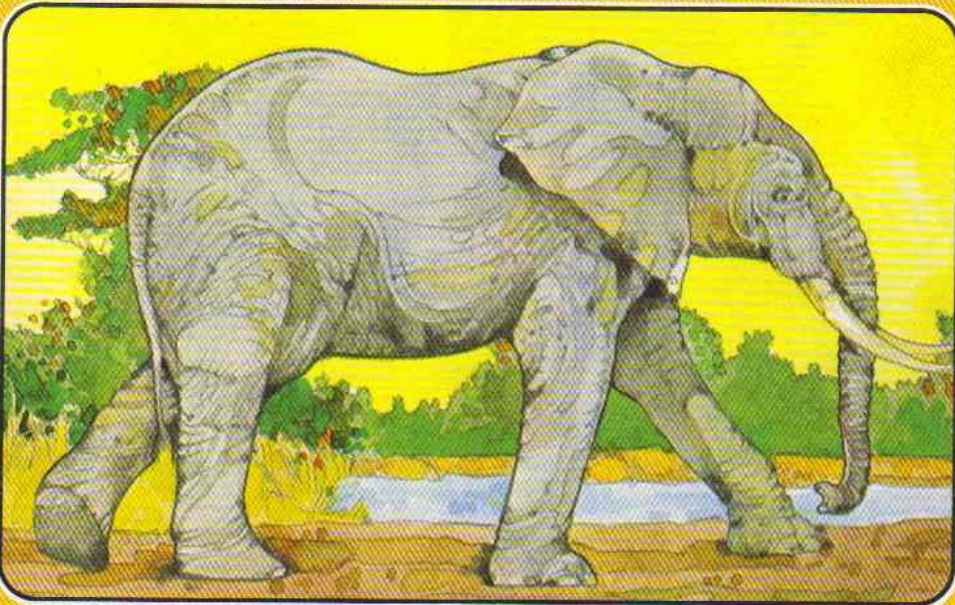
Length of Life: About 25 years.

Home: Open grassy areas.

Food: Antelope, zebras and other animals.

Fact: As many as 30 lions live in a group, which is called a pride. It is the female lion, or lioness, who hunts for food. Male lions sleep up to 18 hours a day.

Scientific Name: *Panthera leo*



African Elephant

Category: Mammal

Size: 12 feet (3.6 m) high, 15 feet (4.5 m) long.

Weight: About 6 tons.

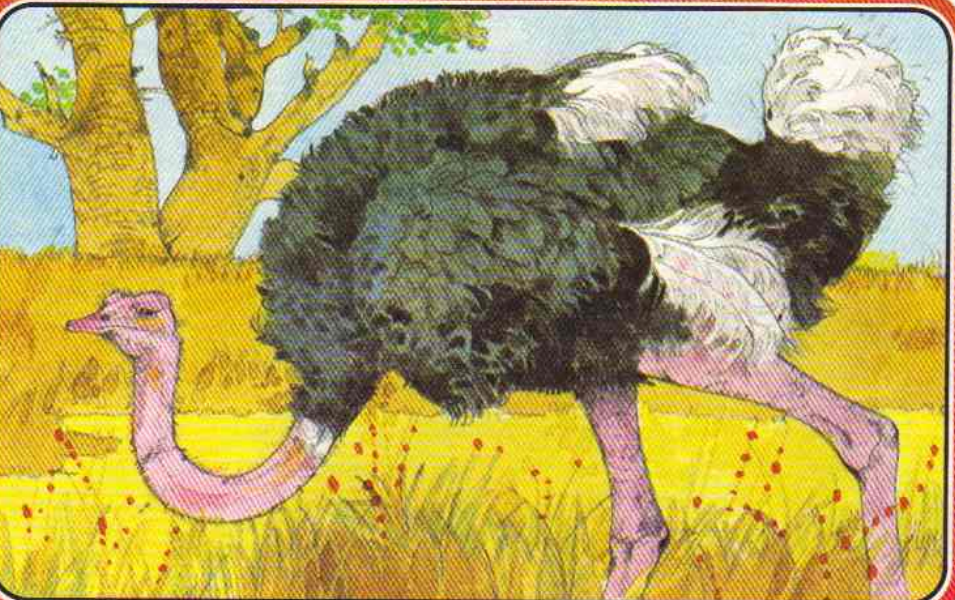
Length of Life: 30 to 50 years.

Home: Open areas.

Food: The elephant eats about 500 pounds (225 kg) of grass, leaves, twigs and bark each day.

Fact: To keep cool on the hot grasslands, an elephant flaps its huge ears like fans. With its trunk it can give itself a shower. The elephant draws water, mud or dust into its trunk. Then it sprays its back.

Scientific Name: *Loxodonta africana*



Ostrich

Category: Bird

Size: About 8 feet (2.4 m) tall.

Weight: About 350 pounds (160 kg).

Length of Life: Up to 50 years.

Home: Open grassy areas.

Food: Grass.

Fact: The ostrich is the largest bird in the world. But its wings are so small that it cannot fly. The ostrich depends on its powerful legs to travel. It can run as fast as 40 miles (64 km) per hour.

Scientific Name: *Struthio camelus*

Contact Report

Highlights from Our TV Show



What a Mess!

Trini, Marc and Lisa are having some fun with a model volcano. The foamy lava is made by mixing food coloring, vinegar, baking soda and liquid soap.

Lava from real volcanoes is superhot liquid rock from deep down in the earth. When forces down there are great enough, the liquid rock, or magma, pushes its way toward the surface. If there are any cracks or weak spots in the surface—BOOM—the magma bursts through as lava.

Tanks a Lot!

Marc is holding a model super-tanker. It's pretty tiny compared to the real one he saw at the Brooklyn Navy Yard. That ship was one of the biggest movable objects ever built.

Giant ships like this are used to carry oil. Americans use millions of barrels of the stuff each day. Most of the oil comes from countries thousands of miles away. Supertankers filled with oil are constantly crossing the oceans. The biggest tanker holds half a million tons!

Tankers weren't always so huge. Oil companies found that the more oil a ship can hold at one time, the cheaper that oil is to carry. So, tankers have been getting bigger and bigger. What's next? Maybe a super-duper tanker!



Contact Report

Highlights from Our TV Show



No Place Like Home

Homing pigeons have been known to find their way across hundreds of miles to reach home. To better understand how they do this, scientists are studying these birds as they find their way back to the coop.

When Trini went to the Fox Ridge Farm in Massachusetts she had a chance to lend a hand with these experiments. Here you can see her sending a pigeon on its way. You can't see it in the picture, but the bird has a small electrical coil around its neck.

The electricity in the coil doesn't hurt the pigeon. But it does confuse the bird. In its head is a kind of built-in compass. This helps the bird find its way home. The electricity interferes with the bird's compass. That makes it very hard for the pigeon to figure out where it is.

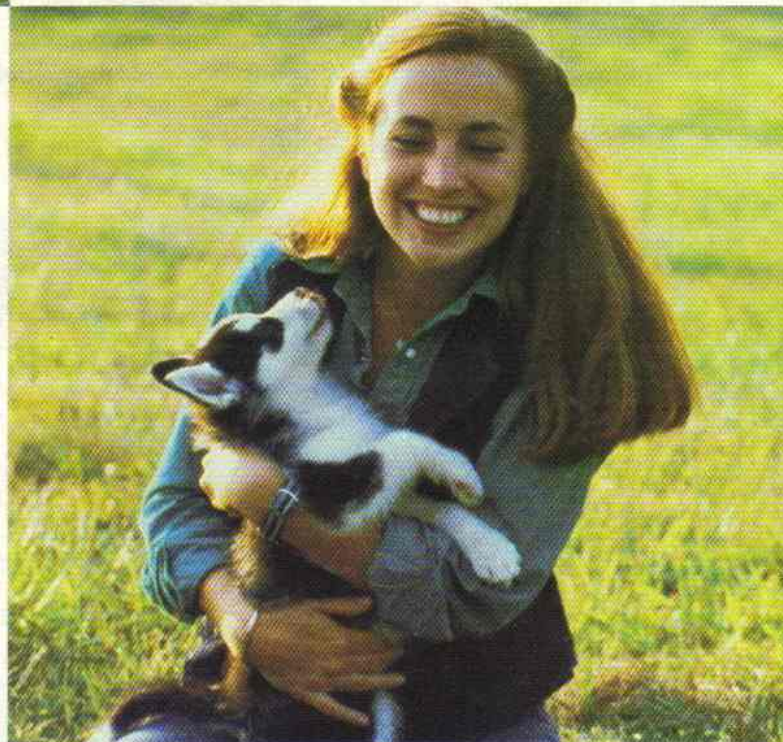
After flying around for a while, this pigeon figured out something was wrong. It was then able to use the position of the sun as a guide for finding the real way home.

Puppy Love

Lisa took a trip to an experimental pet care center in Missouri to find out how they make pet food. Here she is with one of the more than 1,000 dogs and cats which live there. Their job is to test the food.

Scientists at the center feed the animals different foods to find the kinds they like to eat. They also want to know what foods are best for the health of each kind of animal.

Dogs and cats need things like vitamins, protein, fat, starch and sugar, just as people do. Pet foods must contain the right amount of each of these things. To find out how much is enough, the animals are fed different mixtures of each kind of food. The best combination produces the healthiest animals. That formula is then used to make the food you feed to your own pet.



Contact Report

Highlights from Our TV Show



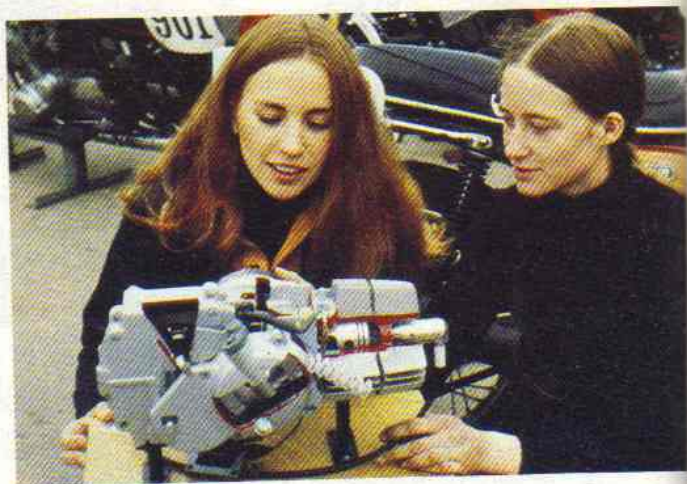
Land of Lava

When Lisa went to Hawaii she met geologist Richard Hazlett. Here, she is helping him place a seismograph (SIZE-mo-graf) on an area of hardened lava on Kilauea volcano. This machine measures movement in the earth's surface. By studying these movements, scientists are learning to predict when volcanoes will erupt. If they can tell when a volcano is about to blow its top, they can move people who live nearby to safety.

Road Racer

When Lisa wanted to learn about gasoline engines, she went to Bryar Motorsport park in New Hampshire. There she met Peggy Preble, an expert auto mechanic and motorcycle racer.

In a race, Peggy's motorcycle gets about 15 miles to the gallon of gas. But in normal driving it gets as much as 40 miles to the gallon. Why? "When I'm racing," Peggy explains, "the engine is running faster." The faster the engine goes, the more gas is burned. "So," she says, "the engine needs more fuel."



Balancing Act

Trini is lifting football player Jerome Barkum and his equipment on a seesaw, even though he's twice as heavy as she is! That's possible because a seesaw is a lever.

Levers are tools that make lifting easier. All levers have two main parts—the lever and the fulcrum (FULL-krum). Trini's lever is the seesaw's board. Her fulcrum is the stand that the board balances on. The closer the fulcrum is to the thing you want to lift, the more weight you can lift. On Trini's seesaw the fulcrum is right under Jerome's equipment bag. When she steps on the board, even though he's heavier than she is, PRESTO! Up he goes.



Contact Us!

Win a T-shirt! We want to know what you think of this issue of 3-2-1 CONTACT. Fill out this form and send it to us. We'll put all of them in a box. Then we'll pick ten without looking. Each winner will get a CONTACT T-shirt.

Mail your form to: Reader Poll
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

1. First, tell us about yourself.

Name _____ Age _____ Grade _____ T-shirt size _____

Address _____

City _____ State _____ Zip code _____

2. About how many different issues of CONTACT have you read?

(Check one)

☐ 3 or less

☐ 4 to 9

☐ 10 or more

3. Who else reads your copy of CONTACT?

☐ My parents ☐ Brothers or sisters ☐ Friends ☐ Other people—Who? _____

4. Now we would like to know what you think of CONTACT.

Each month when I get my magazine, the first story I read is _____

Of all the stories *this* month, my MOST favorite is _____

Of all the stories *this* month, my LEAST favorite is _____

5. Hang on! You're almost done.

Fill in as many of these blanks as you can:

My pet is a _____

The last science project I built was a _____

The instrument I play is a _____

The club I belong to is called _____

The best book I ever read was named _____

My brothers and sisters names and ages are _____

Food for Thought

On page 16 you found out how your stomach works. Now you can find out about the food you put in it. "Good Food News for Kids" is a set of booklets of information and crossword puzzles about the food you eat. You'll learn about the four different types of food and what each one does for your body. For a free copy write to:

U.S. Dept. of Agriculture
GPA Rm. 507A
14th & Independence Ave., SW
Washington, D.C. 20250



Canyons and Mud Pies

When you look at the walls of a canyon, you often see layered, or sedimentary, rock. To get an idea of how this rock forms, try this experiment outdoors.

1. Take a large jar and fill it almost to the top with water.
2. In a small can, mix up a nice mushy batch of mud. Pour this into the jar of water.



3. After a few hours, come back. The dirt should be on the bottom of the jar. The water should be clear. Mix up a new batch of mud and pour that in, too.

4. Repeat this three or four times throughout the day. You may have to scoop out extra water from time to time to keep the jar from overflowing. But don't disturb the mud at the bottom.

At the end of the day you should see several layers of mud in the jar. Each time you pour in mud, the heaviest dirt particles sink fastest and settle at the bottom of each layer. Lighter particles float longer and end up on top.

Long ago, dirt in water sank in layers at the bottoms of ancient lakes, rivers and oceans. Over millions of years, the water dried up and the mud hardened into rock. When canyons were formed by erosion, these layers of rock were revealed.

It's Two Birds, It's Two Planes, It's ...

There aren't any great movies right now for us to tell you about. But hold on for a couple of months. *Superman II* is coming! Clark Kent and Lois Lane are returning with a whole new set of adventures. Watch for *Superman II* in early June.



Lions and Cheetahs and Hippos

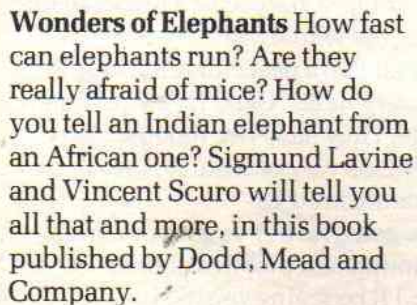
In this month's *Pocket Zoo* you met six animals of the African Grasslands. If you'd like to know more, there are lots of great books you can find in the library or at a bookstore. For starters:

Wildlife on the African Grasslands In this book you'll learn how grassland animals, like lions, cheetahs and zebras, live. You'll also learn why some of these animals are in danger of disappearing. The book is published by Julian Messner.





Animal Babies of East Africa In this book, Monique and Hans Dossenbach introduce you to the many baby animals born each year on the African grasslands. You'll meet elephants, hippopotamuses and more. G.P. Putnam's Sons publishes it.



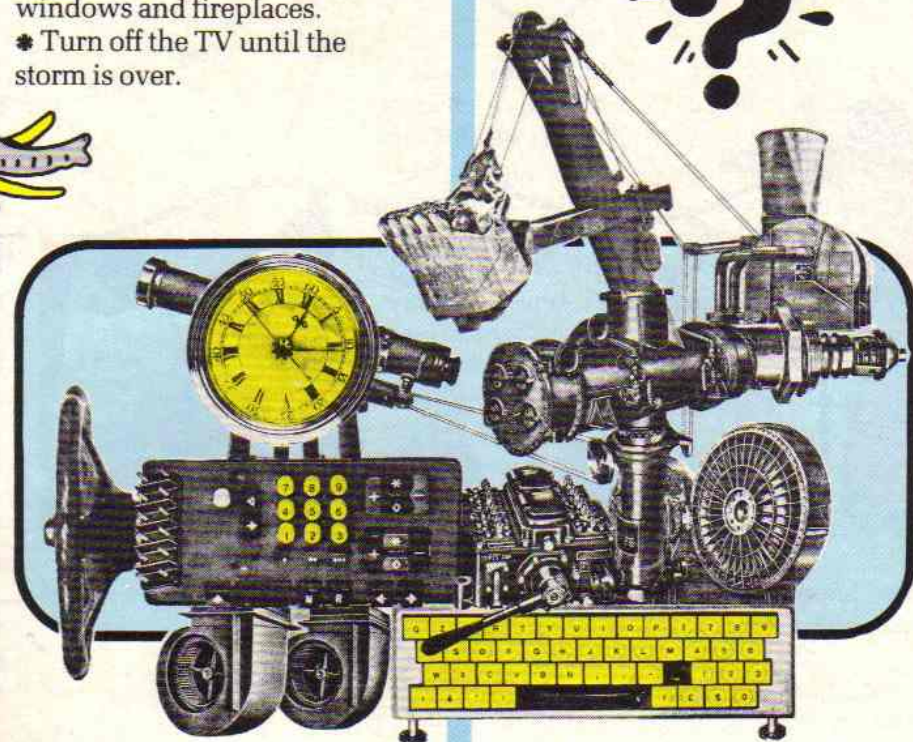
In Any Questions? you learned about lightning. Here are some safety tips to remember next time there's a thunderstorm.

If you're outside:

- ✱ Stay off hills and other high places.
- ✱ Don't carry metal objects or stand near metal fences.
- ✱ Get out of swimming pools and away from water.
- ✱ Keep away from tall objects like trees and telephone poles.

If you're inside:

- * Don't talk on the telephone unless it's an emergency.
- * Stay away from open doors, windows and fireplaces.
- * Turn off the TV until the storm is over.



Here's a gadget that was just discovered by 3-2-1 CONTACT. Trouble is, we don't know just what to do with it. You can help us out. Write and tell us what you think this thing is called and what it is used for. We'll pick the descriptions we like best and send each winner a CONTACT T-shirt. Send your description, name, address and T-shirt size to:

3-2-1 CONTEST: Invention
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657



MAIL

3-2-1 CONTEST Winners

Thanks for all the great planets you invented. On the next three pages are our favorite drawings and stories. Each of these winners will get a CONTACT T-shirt!

I have discovered a new planet outside our solar system. It is twice as large as Jupiter. Though it is the largest planet yet discovered, it only has one moon. The planet is bathed in orange clouds. It is about 96 million miles from its sun.

I have just landed on the planet I call "Gargantus." It is mostly jungle. I see no signs of life as we know it. There are nine-legged creatures crawling over my starship. It is chilly.

I see no sort of food in sight. Other than that, Gargantus would be a great place to live.

I am going back to earth now, leaving Gargantus uninhabited—except for those nine-legged animals.

End of Report. (September 25, 2180)

Tom Melville, Eau Claire, Wisconsin



The planet we are on is called Nearth. The living things on the planet seem to be animals. They seem to pronounce words differently, starting with an "n." If you're wondering how they came to be, some of the animals from Earth got sick of being pushed around. So they decided to take some of the space crafts and go find a planet of their own. The flight lasted a year so everytime it is the 20th of January, they have a feast—food, dancing, the whole bag.

They all live a peaceful life. Their land is very moist. Good for crops. Lots of shade. They have two moons. Many lakes. Seems very peaceful to me. Their temperature is 60°F.

I'll be going now. I've got samples of their ground and pictures of their shelter. I'll be seeing you. So long!

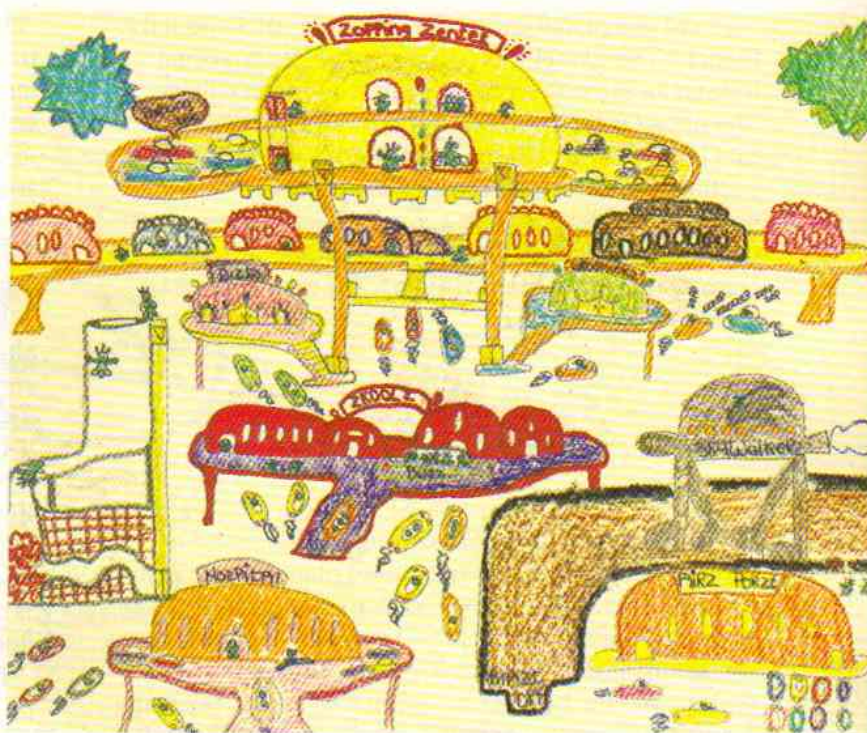
Kim Costello, Robbinsdale, Minnesota

I've never seen such a neat planet!

You've guessed it, I've landed on a planet out of our planet or what we call solar system. I think the planet is called "Zerus." The people on this planet are not people at all. They are creatures! They have green skin and hair, two arms and three fingers on each arm. And get this! Three legs and feet and two toes on each foot. And this is even stranger, they talk English, but have a cute accent, a zee accent. . . .

I wish Earth was like Zerus! There's no pollution cause they don't use gas or have factories. They don't have cars. They have these things called "ground speeders" that don't need gas. Their buildings are off-ground (at least most of them). It's so modern there! And spacey (like those buildings and spaceships in "Star Wars" and "Empire Strikes Back"). All their houses are on one platform. Their houses are very, very modern! They have machine-made maids, etc. They keep their ground speeders on top of their houses.

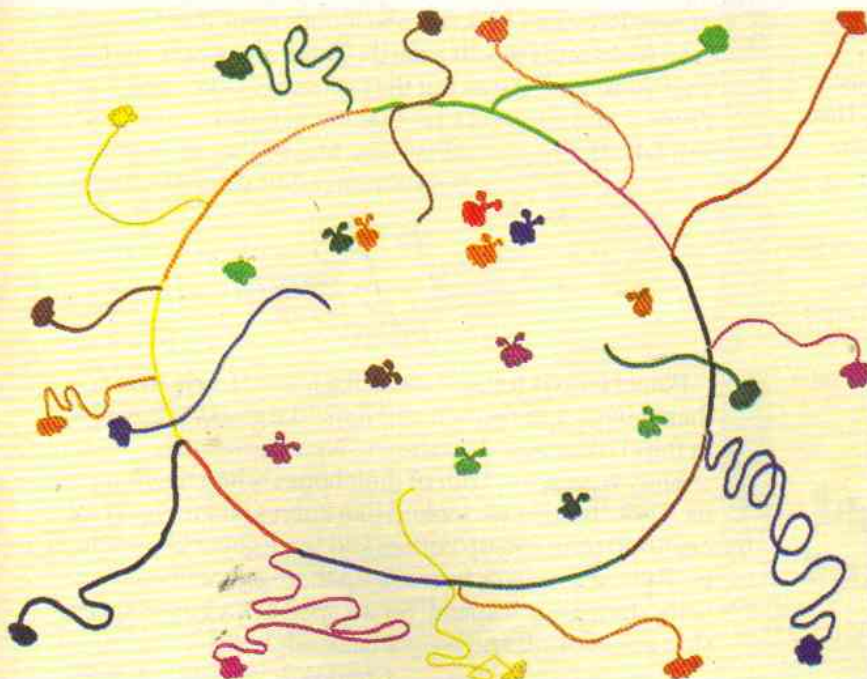
There's one important thing about the planet. There's no oxygen, so I had to wear a mask. Their atmosphere comes from sun #1. It's called Ac-tren. They have two suns. So now that you know what number one is, two is to keep their skin green. There's one weird thing though. They only



have day and no night! So they never go to sleep!

There's a lot more to tell! I only told the good parts though! I never had so much fun in my life. Bye for now.

Laura Abel, Minneapolis, Minnesota



Kcssk (radio static), 3-2-1 CONTACT, come in, come in. Well, I'm 8,779 miles past the sun and I see the planet. It's, it's it's millions of arms coming out of it. (Kcssk,) one of the arms is grabbing for the spaceship. I see an open spot. That is where I'll land. (Kcssk,) all the arms are different colors. And there are little hands walking around. They don't talk. There are no trees or anything but the ground is cement.

(Kcssk,) I have been here for three hours and the little hands don't talk, sleep, eat, laugh, cry or do anything except walk around. Boy, life is a bore here.

What!!!! It looks like 100 little hands are coming for us. Hurry, take off and head for earth.

(5 days later) (Kcssk,) we are home and I was the first person to land on the Planet Armzon. Over and out.

Lynn, New Hope, Minnesota ➡

MAIL

I went to a planet called the "Peanut Butter and Jelly Planet." The planet was inside the sun. It cannot get burned, because it is protected by a giant force field. The planet is the color of a rainbow and the temperature is always 80°. All the houses are made out of peanut butter and jelly sandwiches. And the trees are made out of peanut butter and jelly, too. The people are half-dog, half-person. When you want to go in, you push a button and the sun opens. They are very nice and speak English.

Erin McCarty, Helena, Arkansas



This is space ship 01X23 calling Earth. I have just spotted a large, dark brown colored planet. It seems to have the appearance of a chocolate covered cherry. I am now entering the atmosphere. I suddenly have a strange sensation of being fat and satisfied. I am landing in what appears to be a licorice whip forest. (I am *not* going mad!) There are ginger bread people running around! The entire planet is made of sweets! I've found the people are friendly and that the planet's name is "Yum Yum." The rivers are made of soda pop. There are cookie animals and graham cracker houses. It's all simply delicious! Sorry, guys, I'm staying!

Lynda Tarantino, Canisteo, New York



The planet's name is Pipsqueak. It is blue and has craters with smoke coming out going "pipsqueak." How it feels is shaky. The living things are called the pepy people. They are purple with one antenna, two noses and three eyes. They wear clothes like humans do. They talk with the accent of a New Yorker. They live in a crater and have children. They have a king named King No No. He lives in a castle. He and his wife have a princess and a maid. They live a very nice life.

Michelle Johnson, Irving, Texas



I am soaring through space on a mission to try and find an object (or objects) outside our solar system. So far there is no luck. Wait! There is something on my radar screen. Too big to be a star or comet, but too small to be a real planet. Hold it! It's getting bigger every second. I better drive closer and look right at it. 200 miles, 100 miles, 50, 25, 10 miles away from the planet. Yup! It's getting bigger all right! Now it's as big as Saturn. I think I'll land and see if there is any life there.

Well, I landed. At least there is solid ground and almost as much atmosphere as Earth. So I walked around and found out that there is life on this planet— plants. Tiny ones that look like bugs.

I walked more. I came to a house a little bigger than me. I thought, "There has to be life or what could have made this?" I knocked. A little orange thing opened the door and screamed. A voice inside told me to come in. I later found out that they were called Glumps and the planet is called Glump-a-long. And the bellboy that opened the door screamed because he never saw a human before.

If the Glumps agree to it you could live here like you do on Earth. I can ask them now. They are very friendly.

Sue Conover, King of Prussia, Pennsylvania



Report to 3-2-1 CONTACT. We have found a new planet outside our solar system. Its name is Flatonina. Flatonina is as flat as ancient people thought the earth was. Flatonina is a lot like home. When you are on the surface it doesn't look flat like it does from space. It even looks and feels like Earth. There are people here. They look a lot like us but they dress old fashioned. There is also a legend here that if you travel too far you will fall off the edge of Flatonina. Maybe they are right!

Cory Sinkler, San Antonio, Texas



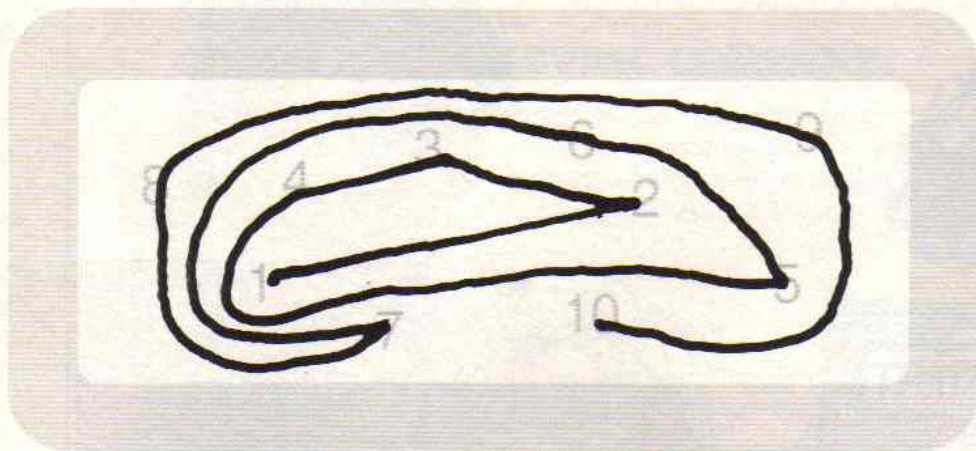
Planet Jello is red and feels like Jello. Things live there but they are brown and look like steaks. They live in the civilization of Cowtown, New Meatsauce.

They were scared out of their bones when they saw us. They thought we looked like knives and forks. They captured us in catsup bottles and were going to recycle us. But we got away, because up there only kids get extra strength and speed. So we sped away to our space ship and took off and we got back safely!!!

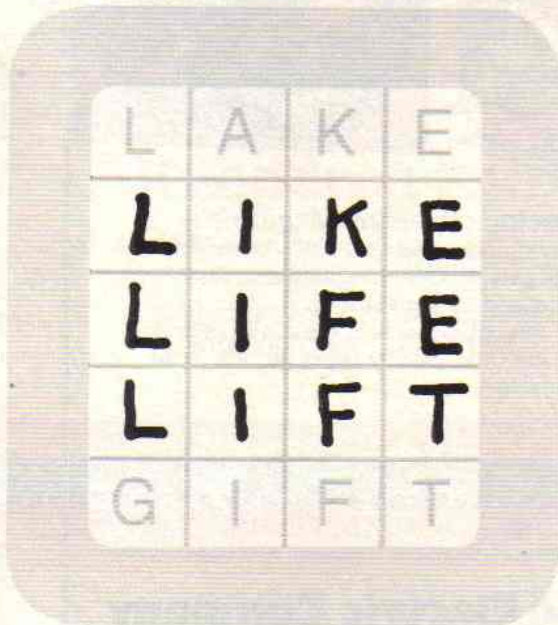
Chad Wise, Decatur, Illinois

ANSWERS

1. Line Up (page 9)



2. A Gift in the Lake (page 9)



3. Animal Squares (page 9)

Here are the animal names we found:

| | | | |
|------|------|-----|-------|
| BAT | COW | ELK | RAT |
| BEAR | CRAB | FOX | TIGER |
| BOAR | DEER | HOG | WOLF |
| CAT | DOE | OX | YAK |
| | DOG | PIG | |

Next Month!

Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

Zoo Without Cages

A visit to a Wild Animal Park in San Diego.

Sports Doctor

Meet a doctor whose patients are baseball stars.

Star Wheel

Where's the Big Dipper? Make your own starfinder and find out.

3-2-1 Contest!

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Credits

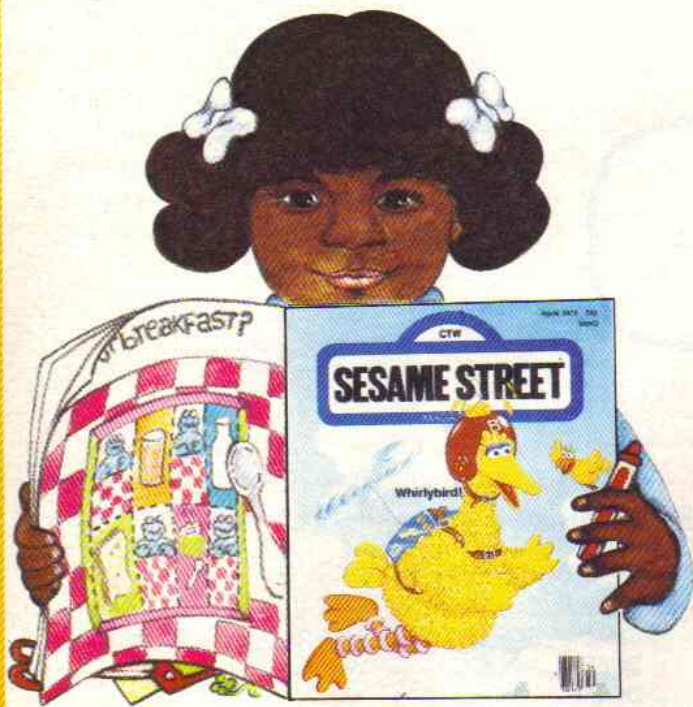
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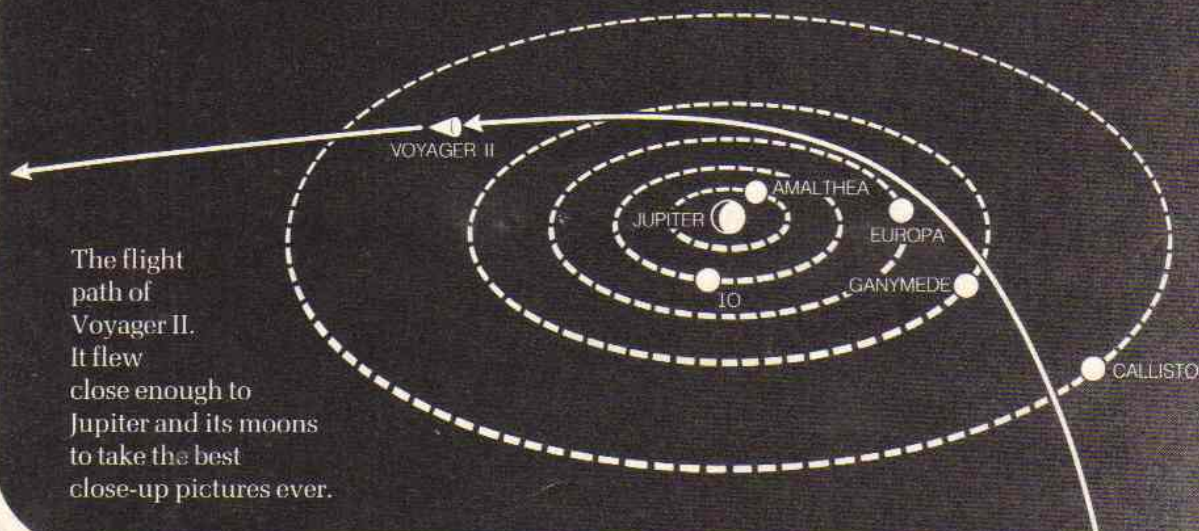
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Skyfacts: The Moons of Jupiter

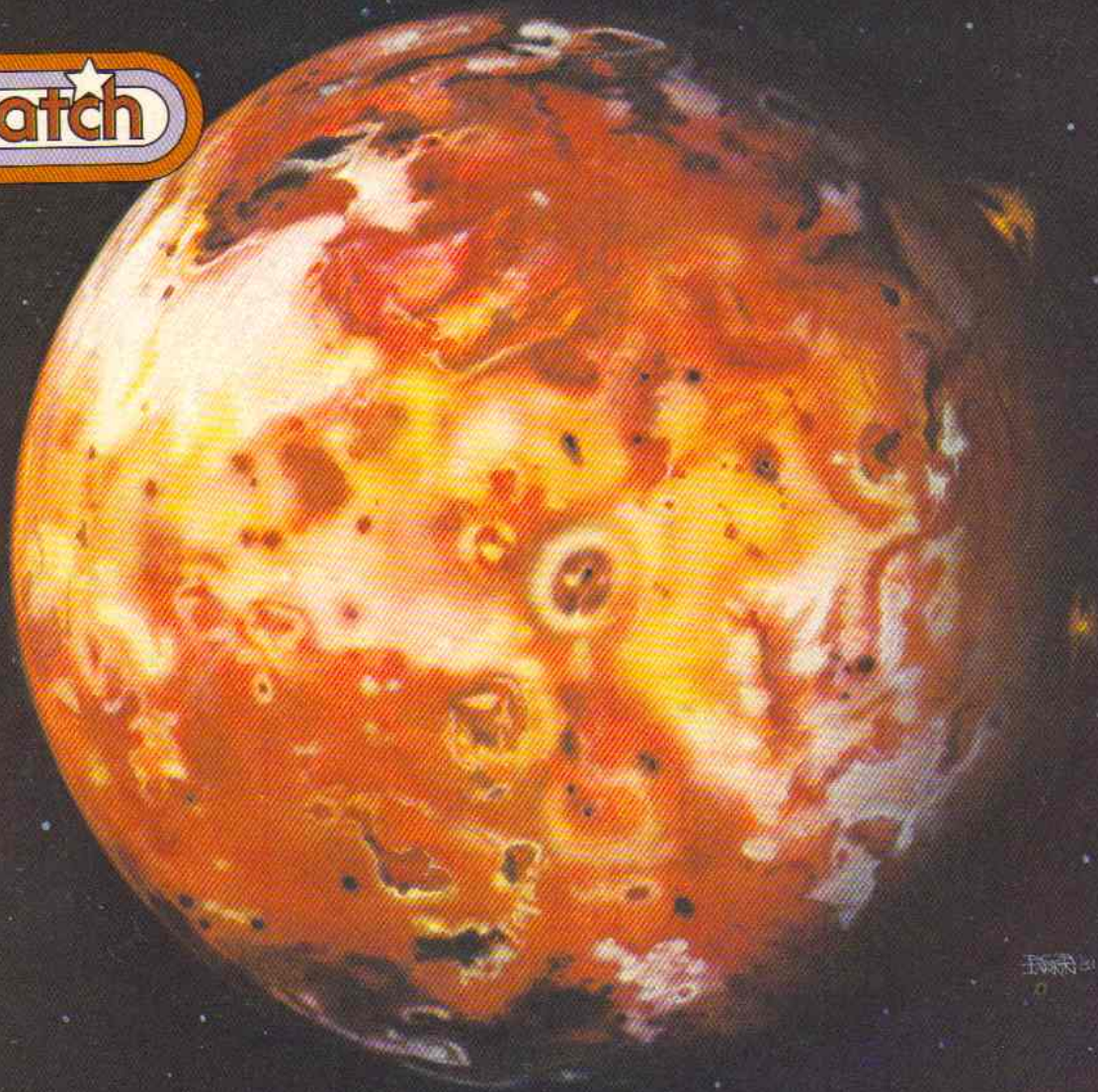
Each month CONTACT will bring you another SKYWATCH. Clip these pages and save them in a notebook. Soon you will have your own guide to outer space.

Skywatch

-  In 1610, the astronomer Galileo was looking through his telescope at Jupiter. At first, he thought he saw four stars near the huge planet. But something strange happened. As he watched the "stars" over the next few nights, he saw them move from one place to another. Galileo knew that stars seem to stay pretty much in the same place from one night to the next. Planets and moons move across the sky more quickly. That meant the objects he saw were no stars at all. They were moons circling Jupiter!
-  Galileo had discovered Jupiter's four largest moons: Io, Europa, Ganymede and Callisto. They are called the *Galilean moons* in honor of their discoverer. Astronomers have since discovered 12 more.
-  The five moons closest to Jupiter are named Amalthea, Io, Europa, Ganymede and Callisto.
-  Amalthea is the moon closest to Jupiter. It is not round but long and irregular.
-  Amalthea takes only 12 hours to orbit Jupiter. That makes it the fastest moving moon ever discovered in the solar system.
-  The surface of Io has many active volcanoes. It is the only body in the solar system, other than Earth, where active volcanoes have been found.
-  Europa is covered with ice and frost. It is the smoothest object yet discovered in our solar system. It is also the brightest of Jupiter's moons.
-  Ganymede is the largest of Jupiter's moons. Its surface is ice. Underneath, it is made mostly of liquid water.
-  Callisto is believed to have more craters on its surface than any other body in our solar system.
-  Jupiter's other moons are Himalia, Elara, Lysithia, Ananke, Carme, Pasiphae and Sinope. The last two to be discovered have not yet been named.
-  Jupiter's moons don't all travel in the same direction. The ones farthest away from the planet circle it in the opposite direction from the ones closest to it.



Skywatch



Io has many active volcanoes.

Focus on the Moons of Jupiter

by Jan Carr

In 1977, the exploration spaceship Voyager I was launched. Two years later, it flew by Jupiter and sent back pictures to Earth. The pictures contained a surprise for scientists. They already knew there were 14 moons circling Jupiter. The pictures showed two more that had never been seen before!

Jupiter and its 16 moons are like a mini solar system. Moons closest to Jupiter are denser than ones farther away. It's the same in our solar system. Planets, like Earth, that are closer to the sun are denser than the ones far away, like Neptune.

Scientists hope to learn more about Jupiter and its moons from another space explorer called *Project Galileo*. It's planned for sometime between now and 1985. So keep watching!

(continued on page 39)